Note remarks

: PEN 12,2 b : 28.09.89 : 31.3.89 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 401 876 761

Injection pump

Pump designation : PE6P120A320RS3206 : 0 411 826 773 EP type number

Governor

Governor design. : RSV250...900P4A374-6

: 0 421 833 283 Governer no.

Customer-spec. information

: VOLVO-PENTA Customer

: TAMD122 A Engine

: 280.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rbm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.5 Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1200
Del.quantity : 275.5...277.5
1000 : (272.5...280.5)
Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.70 rpm : 925...935 Speed 2nd rack travel in: 4.00 : 985...1015 Speed rpm 3rd rack travel in: 4.00 : 995...1025 Speed COM 4th rack travel in: 1130 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever

position degrees: 18...26 Setting point w/out bumper spring : 250 rpm Rack travel in mm : 4.6 : 250 Speed rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 : 380...440 Speed rpm

Aneroid/Altitude Compensator Test

1st version Setting Speed rpm

: 700 Pressure hPa : 1200 Rack travel mm : 11.70...11.80

Measurement

Speed 1/min: 700

1st pressure hPa :-Rack travel in m: 8.60...8.80 2nd pressure hPa : 240

Rack travel in m: 8.90...9.00 3rd pressure hPa : 770 Rack travel in m: 11.20...11.60

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: rpm : 700 Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (250.0...290.0)

LOW IDLE

Speed rpm Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: PEN 12,2 b1 Test sheet Edition : 28.09.89 : 11.11.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 761A

Injection pump

Pump designation : PE6P120A320RS3206 : 0 411 826 773 EP type number

Governor

Governor design. : RSV250...900P4A374-6

: 0 421 833 283 Governer no.

Customer-spec. information

: VOLVO-PENTA Customer

: TAMD122 A Engine

: 280.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 290.5...292.5 1000 : (287.5...295.5)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 11.10 Speed rpm : 1020...1030 2nd rack travel in: 4.00 Speed rpm : 1080...1110 3rd rack travel in: 4.00 : 1090...1120 Speed rpm 4th rack travel in: 1160 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring Speed rpm : 250 rpm Rack travel in mm: 4.6 : 250 Speed rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 Speed rpm : 380...440 Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed rpm hPa : 1200 Pressure Rack travel mm : 12.10...12.20 Measurement Speed 1/min: 700 1st pressure hPa : -Rack travel in m: 8.60...8.80 2nd pressure hPa : 360 Rack travel in m: 8.90...9.00 3rd pressure hPa : 1030 Rack travel in m: 11.70...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 925...935 Speed

Speed rpm : 100 Rack travel in mm : 8.60...8.80

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

STARTING FUEL DELIVERY

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : PEN 12,2 b2 Test sheet : 02.10.89 Edition : 9.12.88 Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Combination no. : 0 401 876 762 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PE6P120A320RS3206 EP type number : 0 411 826 773 BASIC SETTING Governor Governor design. : RSV250...900P4A374-7 1st speed rom: 700 : 0 421 833 284 Governer no. Rack travel in mm : 9.90...10.00 Customer-spec. information Del.quantity cm3/: 21.2...21.4 Customer : VOLVO-PENTA 100 s: (20.9...21.7) : TMD 122 A (HD) Engine : 236.0 cm3 : 0.51st version kW Spread : 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. , C : 38...42 100 s: (1.4...2.6) cm3 : 0.5 100 s: (0.7) Overflow valve Spread : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-Lever position Degree: -3 Test nozzle holder Speed rpm: 800 Rack travel in mm: 0.30...0.70 : 1 688 901 019 assembly **Opening** : 207...210 Governor spring pre-tension pressure, bar Click setting x : 4.00Orifice plate FULL LOAD DELIV. AT FULL LOAD STOP diameter mm : 0,8 1st version : 1 680 750 067 Speed rpm : 700 Test Lines Aneroid pressure h: 900 Del.quantity : 212.3...217.5) Outside diameter x Wall thickness : 5.00 : 6.00x1.50x1000 cm3 x Lenath mm Spread 1000 : (9.00) (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. RATED SPEED 1st version per values Control lever position degrees: 48...56 BEGINNING OF DELIVERY

Testing:

Test pressure, bar: 25...27

1st rack travel in: 8.90 rpm : 910...920 Speed 2nd rack travel in: 4.00 rpm : 940...970 Speed 4th rack travel in: 1130 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 4.6 Speed : 250 rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 : 370...430 Speed rom Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed rom hPa : 900 Pressure : 9.90...10.00 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 8.40...8.60 2nd pressure hPa : 430 Rack travel in m: 8.70...8.80 3rd pressure hPa : 610 Rack travel in m: 9.60...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 173.0...175.0 1000 s: (170.0...178.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 910...920 Speed

Rack travel in mm : 8.40,...8.60 LOW IDLE Speed rpm Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 5.00Spread 1000 s: (7.00) Remarks: : Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

STARTING FUEL DELIVERY

Speed rpm: 100

A06

: 3.50...3.60 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Note remarks Test sheet : VOL 12,2 c : 02.10.89 Edition : 9.6.89 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Tolerance + - ... : 0.50 (0.75)Combination no. : 0 401 876 769 Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3206-2 : 0 411 826 784 EP type number BASIC SETTING Governor Governor design. : RSV250..1300P0A374-8 rpm: 700 1st speed : 0 421 833 320 Governer no. Rack travel in mm : 10.70...10.80 Customer-spec. information Del.quantity cm3/: 23.5...23.7 Customer : VOLVO-TRUCK : TAMD71A PD 100 s: (23.2...24.0) Engine cm3 : 0.51st version kW : 280.0 Spread : 2600 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. ., C . : 38...42 100 s: (1.4...2.6) cm3 : 0.5 Overflow valve Spread 100 s: (0.7) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 rpm : 800 assembly : 1 688 901 019 Rack travel in mm : 0.30...1.40 **Opening** pressure, bar : 207...210 Governor spring pre-tension Click setting x : 6.00Orifice plate FULL LOAD DELIV. AT FULL LOAD STOP : 0,8 diameter mm 1st version : 1 680 750 067 Speed Test lines rpm : 700 Aneroid pressure h: 1200 Del.quantity : 235.5...237.5 1000 : (232.5...240.5) Spread cm3 : 5.00 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm 1000 : (9.00) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. 1st version per values Control lever position degrees: 56...64 BEGINNING OF DELIVERY Test pressure, bar: 25...27

Testing:

1st rack travel in: 9.70 Speed : 1295...1305 rpm 2nd rack travel in: 4.00 : 1375...1405 Speed rpm 3rd rack travel in: 4.00 : 1385...1415 Speed rpm 4th rack travel in: 1500 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 26...34 Setting point w/out bumper spring : 250 rom Rack travel in mm: 4.7 Speed : 250 rpm Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 : 450...510 Speed rom Aneroid/Altitude Compensator Test 1st version Setting Speed : 700 rpm hPa : 1200 Pressure Rack travel mm : 10.70...10.80 Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 7.40...7.60 2nd pressure hPa : 960 Rack travel in m: 10.40...10.50 3rd pressure hPa : 485 Rack travel in m: 7.80...8.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm: 700 Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1295...1305 Speed

Speed rpm : 100 Rack travel in mm : 7.30...7.50 LOW IDLE Speed rpm Rack travel in mm : 5.10...5.30

Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

Spread cm3 : 5.00

1000 s: (7.00) Remarks: Delivery—valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : LIE 12,0 a : 13.12.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 770

Injection pump

Pump designation : PE6P110A320LS3852

: 0 411 816 768 EP type number

Governor

Governor design. : RSV400...900P1A544

: 0 421 833 326 Governer no.

Customer-spec. information Customer : LIEBHERR

: D 9306T Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-6-3-5-Firing order

: 0-75-120-195-240-315 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 890

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.8...14.1

100 s: (13.5...14.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.3...1.8

100 s: (1.0...2.0)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 890 Speed

: 138.0...141.0 Del.quantity 1000 : (135.5...143.5)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.70 rpm : 930...940 Speed

2nd rack travel in: 4.00

Speed rpm: 945...975 3rd rack travel in: 4.00

rpm : 950...980 Speed

4th rack travel in: 1120

: 0.30...1.40 Speed rom LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring Speed : 400 rpm Rack travel in mm : 5.4 : 400 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed : 450...510 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 890 Rack travel in m: 11.70...11.80 and speed rpm : 500 Rack travel in m: 11.70...11.90 2nd speed rpm : 420 3rd speed Rack travel in m: 12.90...13.50 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rom Del.quantity cm3/: 140.0...144.0 1000 s: (137.0...147.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 930...940 INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE : 400 Speed rpm Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 13.0...18.0 1000 s: (10.5...20.5) cm3 : 4.50Spread 1000 s: (7.50) Remarks:

Note remarks

Test sheet : ENA 12,9 b Edition : 01.12.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 771

Injection pump

Pump designation : PE6P120A320RS3244 EP type number : 0 411 826 788

Governor

Governor design. : RSV250...1000P0A545

Governer no. : 0 421 833 329

Customer-spec. information : ENASA Customer

: 98 W1AD_MR4 Engine

1st version kW : 309.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

· 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.30...3.40 Prestroke mm

: (3.25...3.45)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 1000 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 26.0...26.2

100 s: (25.7...26.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : ? Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1400

: 260.0...262.0 Del.quantity

1000 : (257.0...265.0) cm3 : 5.00 1000 : (9.00)

Spread

RATED SPEED

1st version

Control Lever

position degrees: 34...42

Testing:

1st rack travel in: 11.60 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 : 1070...1100 Speed rpm 3rd rack travel in: 4.00

rpm : 1070...1100 Speed 4th rack travel in: 1250

rom : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 11...19 Setting point w/out bumper spring

rpm Rack travel in mm: 3.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 3.40...3.60
Rack travel in mm : 2.00 Speed rpm : 270...330

TORQUE CONTROL

Dimension a mm : 2.90

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.50...12.70

2nd speed rpm : 450

Rack travel in m: 12.60...12.70 3rd speed rpm : 300

Rack travel in m: 13.80...14.40

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 1400 Pressure

: 12.60...12.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.40...8.80

2nd pressure hPa : 970

Rack travel in m: 11.60...11.70

3rd pressure hPa : 510 Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 141.5...143.5 1000 s: (138.5...146.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Navy

Note remarks

: ENA 11,9 j : 09.11.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 772

Injection pump

Pump designation : PE6P120A320RS3200

EP type number : 0 411 826 766

Governor

Governor design.: RSV250...1000P0A545-

: 0 421 833 330 Governer no.

Customer—spec. information Customer : ENASA

: 96 T1EO.MR4 Engine

: 250.0 : 2000 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rbm: 1000 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 3.3...3.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1200

: 236.0...238.0 Del.quantity

1000 : (233.0...241.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing: Speed

1st rack travel in: 10.60

rpm : 1040...1050 2nd rack travel in: 4.00

rpm : 1070...1100 Speed

3rd rack travel in: 4.00 rpm : 1070...1100 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 12...20 Setting point w/out bumper spring

: 250 rpm Rack travel in mm: 5.5

Testing:

: 100 Speed rom Minimum rack trave: 19.50 : 250 rpm

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

Speed : 330...390 rom

TORQUE CONTROL

Dimension a mm : 2.90

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 11.50...11.70

: 450 2nd speed rpm

Rack travel in m: 11.60...11.70

rpm : 300 3rd speed

Rack travel in m: 12.80...13.40

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 1200 Pressure

: 11.60...11.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60 2nd pressure hPa : 790

Rack travel in m: 10.90...11.00

3rd pressure hPa : 540

Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 133.5...135.5 1000 s: (130.5...138.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Navy

Note remarks

Test sheet : MB 14,6 t 1 : 15.08.89 Edition : 16.6.88 Replaces Test oil : ISO-4113

: 0 401 878 706 Combination no.

Injection pump

Pump designation : PE8P110A320LS3813-10

: 0 411 818 712 EP type number

Governor

Governor design. : RSV350...750P0A824-2 Governer no. : 0 421 833 228

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M422

1st version kW : 173.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance $+ - \dots = 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.2...7.5 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 142.0...144.0 Del.quantity 1000 : (139.5...146.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 26...34

Testina:

1st rack travel in: 12.10 Speed rpm : 750...755 2nd rack travel in: 4.00 Speed rpm: 780...793 4th rack travel in: 1200

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 12...20 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.35

Testing:

Speed rpm : 100 Minimum rack trave: 17.50 Speed rpm : 350 Rack travel in mm : 7.20...7.50

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1175...1185 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

Observe VDT-I-420/120

Note remarks

Test sheet : MB 14,6 p 2 Edition : 15.08.89 Replaces : 9.3.87

Test oil : ISO-4113

Combination no. : 0 401 878 708

Injection pump

Pump designation: PE8P120A320LS3816-10

EP type number : 0 411 828 715

Governor

Governor design. : RSV450...1150P0A823-

1

Governer no. : 0 421 833 243

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M422A

1st version kW : 243.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \frac{1}{2}$: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1130

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 450.0 Rack travel in mm : 4.4...5.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1130

Del.quantity : 158.0...160.0

1000 : (155.0...163.0) Spread cm3 : 5.00

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 38...46 Testing: 1st rack travel in: 10.00 Speed rpm : 1160...1170 2nd rack travel in: 4.00 Speed rpm : 1185...1205 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 4.5 Testing: Speed rpm Minimum rack trave: 19.50 rpm : 450 Speed Rack travel in mm : 4.40...4.70 Rack travel in mm: 2.00 rpm : 450...520 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rom Del.quantity cm3/: 158.0...164.0 1000 s: (155.0...167.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1160...1170 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks: Engine-speed difference between 1 mm

regulated and control-rod travel 4 mm =

25...35 1/min.

Note remarks

: LIE 16,0 a : 13.12.89 Test sheet Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 401 878 714

Injection pump

Pump designation : PE8P110A520/4LS3853

EP type number : 0 411 818 720

Governor

Governor design. : RSV400...900P1A544

: 0 421 833 326 Governer no.

Customer-spec. information : LIEBHERR Customer

: D 9308 TB Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-2-6-3-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 890

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 17.5...17.8

100 s: (17.2...18.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.3...1.8

100 s: (1.0...2.0) cm3 : 0.4

Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 890 Speed

Del.quantity : 1/3.0....180.5)

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 12.80 rpm: 930...940 Speed

2nd rack travel in: 4.00

rpm : 945...975 Speed

3rd rack travel in: 4.00 rpm : 950...980 Speed

4th rack travel in: 1120 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 16...24 Setting point w/out bumper spring : 400 rom Rack travel in mm: 5.4 : 400 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 450...510 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 890 1st speed Rack travel in m: 13.80...13.90 nd speed rpm: 500 Rack travel in m: 13.80...14.00 rd speed rpm: 420 2nd speed 3rd speed Rack travel in m: 15.00...15.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 172.0...176.0 1000 s: (169.0...179.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 rom : 930...940 Speed INTERMEDIATE RATED SPEED Rack travel in mm : 4.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE : 400 Speed rpm Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 13.0...18.0 1000 s: (10.5...20.5) cm3 : 4.50 Spread 1000 s: (7.50)

A20

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 18,3 i 4 : 13.12.89 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 879 706 Injection pump Pump designation: PE10P110A320LS3818-EP type number : 0 411 819 706 Governor Governor design. : RSV750...1050P0A823-: 0 421 833 323 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : OM 423 Engine : 251.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp., C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 130...150 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm

Test pressure, bar: 25...27 : 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1- 8-- 6- 3- 5- 2 Firing order : 0-45-72-117-144-189-Phasing 216-261-288-333 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 10 BASIC SETTING 1st speed rpm: 1030 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 12.3...12.5 100 s: (12.0...12.7) cm3 : 0.4Spread 100 s: (0.8) rpm : 750.0 2nd speed Rack travel in mm: 6.1...6.6 Del.quantity cm3/: 1.2...2.0 100 s: (0.9...2.2) cm3 : 0.4 Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 2.25FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1030 Speed 1000 : (123.0...125.0 cm3 : 4.00 Del.quantity Spread 1000 : (8.00) RATED SPEED 1st version

Control lever

position degrees: 32...40

BEGINNING OF DELIVERY

per values ____

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Forage harvester

Testing: 1st rack travel in: 10.00 Speed rpm : 1060...1070 2nd rack travel in: 4.00 rpm : 1085...1100 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 22...28 Setting point w/out bumper spring Speed rpm : 750 Rack travel in mm : 6.3 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 750 Speed rpm Rack travel in mm : 6.10...6.60 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 102.0...108.0 1000 s: (99.0...111.0) Spread cm3 : 6.001000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1060...1070 STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks: Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min. APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Note remarks Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 : MAN 11,9a40 Firing order Test sheet : 02.10.89 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 402 036 047 Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 BASIC SETTING : D 412 026 051 EP type number Governor Governor design. : RQ300/1100PA679 rpm: 750 1st speed : 0 421 801 228 Governer no. Rack travel in mm : 12.60...12.70 Customer-spec. information Del.guantity cm3/: 22.7...22.9 Customer : D2866KUL 100 s: (22.4...23.2) Engine : 265.0 : 2200 cm3 : 0.5Spread 1st version kW Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm : 5.0...5.2 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. .. C . : 38...42 100 s: (0.9...2.1) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 rpm : 600 assembly Speed Rack travel in mm : 19.20...20.80 **Openina** FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar 1st version Orifice plate diameter mm Speed : 0,8 rpm : 750 Aneroid pressure h: 1000 Del.quantity : 227.0...229.0 1000 : (224.0...232.0) cm3 : 5.00 Test lines : 1 680 750 067 Spread 1000 : (9.00) Outside diameter x Wall thickness : 6.00X1.50X1000 RATED SPEED x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point:

: 600

rpm Rack travel in mm: 20.0

Testing:

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

1st rack travel in: 11.30 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 6.60 Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00 : 370...410 Speed rom TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 13.30...13.50 and speed rpm : 1100 Rack travel in m: 12.30...12.40 2nd speed rpm : 965 3rd speed Rack travel in m: 13.10...13.30 4th speed rpm : 1010 Rack travel in m: 12.70...13.00 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1000 Pressure : 12.60...12.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.70...8.90 2nd pressure hPa : 250 Rack travel in m: 9.00...9.10 3rd pressure hPa : 700 Rack travel in m: 11.20...11.60 START CUT-OUT 1/min: 190 (210) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000 : 1100 Speed rpm Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0) Aneroid pressure h: 1000 Speed rpm Del.quantity cm3/: 228.0...234.0 1000 s: (225.0...237.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 118.0...120.0 1000 s: (115.0...123.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (205.0...225.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.00...5.20 Del.quantity cm3/ : 12.0...18.0 1000 s: (9.0...21.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7717

A24

Note remarks

Test sheet : MAN 11,9a21 : 02.10.89 Edition : 29.1.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 036 057

Injection pump

Pump designation: PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQV300...1100PA700-1

: 0 421 813 528 Governer no.

Customer—spec. information Customer : MAN

: D2866LF Engine

: 243.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.40...1.60 travel mm

rpm : 850 2nd speed

: 5.60...5.90 : 1100 travel mm

3rd speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750 Aneroid pressure h: 1000

Del.quantity : 202.0...207.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 48...56 Testing: 1st rack travel in: 9.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 14...22 Testina: Speed : 100 riom Minimum rack trave: 6.30 rpm : 300 Speed Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 310...410 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.30...11.40 : 1100 2nd speed rpm Rack travel in m: 10.60...10.70 : 850 3rd speed rpm Rack travel in m: 11.00...11.20 : 975 4th speed rpm Rack travel in m: 10.70...11.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 1000 Rack travel mm : 11.30...11.40 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40

Rack travel in m: 10.50...10.90 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 1100 Speed rpm Del.quantity cm3/: 206.0...208.0 1000 s: (203.0...211.0) Aneroid pressure h: 1000 : 650 Speed rpm Del.quantity cm3/: 208.0...214.0 1000 s: (205.0...217.0) Aneroid pressure h: 280 : 500 Speed rpm Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks:

3rd pressure hPa : 280

Note remarks

: MAN 11,9a19 Test sheet : 02.10.89 Edition : 7.12.87 Replaces : ISO-4113 Test oil

Combination no. : 0 402 036 058

Injection pump

Pump designation : PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQ300/1100PA684-1 Governer no. : 0 421 801 344

Customer-spec. information Customer : MAN

Engine : D2866LF

: 243.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 45 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750 Aneroid pressure h: 1000

Del.quantity : 202.0...207.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.70 Aneroid pressure h: 1000 : 1100 rpm : 1145...1160 Speed rpm Speed Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 Aneroid pressure h: 1000 rpm : 0.00...1.00Speed Speed rpm : 650 Del.quantity cm3/: 198.0...204.0 1000 s: (195.0...207.0) LOW IDLE 1 Setting point w/out bumper spring Aneroid pressure h: 280 rpm : 300 500 Speed rpm Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) Rack travel in mm: 4.8 Aneroid pressure h: -Testing: rpm : 500 Speed Speed : 100 rpm Del.quantity cm3/: 132.0...134.0 Minimum rack trave: 6.30 : 300 1000 s: (129.0...137.0) rpm Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 : 340...380 Speed rom **BREAKAWAY** TORQUE CONTROL 1st version 1mm rack travel less than Dimension a mm : 0.50 Torque control curve - 1st version rpm : 750 full load rack tr: 9.70 1st speed rpm : 1145...1160 Rack travel in m: 11.90...12.20 Speed rpm : 1100 2nd speed Rack travel in m: 10.70...10.90 STARTING FUEL DELIVERY rpm : 875 3rd speed Rack travel in m: 11.80...12.00 th speed rpm : 950 Rack travel in m: 11.20...11.50 Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0) 4th speed Aneroid/Altitude LOW IDLE Compensator Test : 300 Speed rpm Rack travel in mm : 4.70...4.90 1st version Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Setting : 500 Speed man hPa : 1000 cm3 : 8.00 1000 s: (12.00) Pressure Spread : 11.10...11.20 Rack travel mm Remarks: Measurement 1/min: 500 : MAN-NR. 2-7756 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40
3rd pressure hPa : 280 Rack travel in m: 10.50...10.90 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

A28

Note remarks

: MAN 11,9a31 Test sheet : 24.11.89 Edition : 10.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 036 073

Injection pump

Pump designation : PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQ300/1100PA813-4 : 0 421 801 425 Governer no.

Customer-spec. information : MAN Customer

: D2866KUH Engine

: 265.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm: 12.50...12.60

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 750 Speed

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Aneroid pressure h: 1000

: 238.0...240.0 Del.quantity 1000 : (235.0...243.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

rpm : 750 Speed Rack travel in mm: 15.5

Testing:

1st rack travel in: 10.50 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 : 1185...1215 Speed rom 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.3 Testing: Speed rpm : 100 Minimum rack trave: 6.80 Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00 Speed rpm : 400...440 TORQUE CONTROL Dimension a mm : 0.35Torque control curve – 1st version rpm : 1100 1st speed Rack travel in m: 11.50...11.60 rpm : 750 2nd speed Rack travel in m: 12.70...12.90 rpm : 880 3rd speed Rack travel in m: 12.30...12.50 4th speed rpm : 925 Rack travel in m: 11.70...12.00 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rom hPa : 1000 Pressure : 12.50...12.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 190 Rack travel in m: 8.90...9.00 3rd pressure hPa : 520 Rack travel in m: 11.10...11.40 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000 Speed : 1100 rpm Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) Aneroid pressure h: 1000 : 650 Speed rpm Del.quantity cm3/: 238.0...244.0 1000 s: (235.0...247.0) Aneroid pressure h: 520 : 500 rpm Del.quantity cm3/: 191.0...197.0 1000 s: (188.0...200.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0) BREAKAWAY 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

full load rack tr: 10.50

Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0)

rpm : 1145...1160

LOW IDLE

Speed

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7904

APPLICATION

Omnibus

B₀₂

Note remarks

Test sheet : MAN 11,9a34
Edition : 24.11.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 402 036 075

Injection pump

Pump designation : PES6P120A720/3LS470-

2

EP type number : 0 412 026 050

Governor

Governor design. : RQ300/1100PA813-5

Governer no. : 0 421 801 434

Customer—spec. information Customer : MAN

Engine : D2866TUH

1st version kW : 213.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed rpm: 750

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750 Aneroid pressure h: 1000

Del.quantity : 185.0...187.0 1000 : (182.0...190.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 750 Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.80 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.3 Testina: : 100 Speed rpm Minimum rack trave: 6.80 Speed rpm: 300
Rack travel in mm: 5.20...5.40
Rack travel in mm: 2.00 : 390...430 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.00...11.10 2nd speed rpm : 750 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 10.80...10.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 190 Rack travel in m: 8.80...8.90 3rd pressure hPa : 350 Rack travel in m: 9.80...10.20 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1100 Speed Del.quantity cm3/: 190.0...196.0 1000 s: (187.0...199.0) Aneroid pressure h: 350

Speed rpm : 500 Del.quantity cm3/: 164.0...176.0 1000 s: (161.0...179.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1145...1160 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 205.0...225.0 1000 s: (201.0...229.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MAN-NR. 2-7892

APPLICATION

Omnibus

B04

Note remarks

: MAN 11,9a35 Test sheet : 08.09.89 Edition Replaces : 7.4.89 Test oil : ISO-4113

: 0 402 036 076 Combination no.

Injection pump

Pump designation: PES6P120A720/3LS470-

: 0 412 026 055

EP type number Governor

Governor design. : RQV300...1100PA700-5

: 0 421 813 713 Governer no.

Customer-spec. information : MAN Customer

: D2866LFG Engine

: 243.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 300 1st speed

: 1.50...1.90 travel mm

rpm : 450 2nd speed

travel mm : 2.90...3.50

rpm : 850 3rd speed

: 5.50...5.90 travel mm

rpm : 1100 4th speed

: 7.40...7.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Aneroid pressure h: 1000

Rack travel in m: 9.30...9.40 : 202.0...204.0 Del.quantity 1000 : (199.0...207.0) 3rd pressure hPa : 280 : 5.00 Rack travel in m: 10.50...10.80 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 48...56 1st version Testing: 1st rack travel in: 9.90 Aneroid pressure h: 1000 rpm : 1140...1150 Speed rpm : 1100 Del.quantity cm3/: 205.0...209.0 Speed 2nd rack travel in: 4.00 rpm : 1225...1255 1000 s: (202.0...212.0) Speed 4th rack travel in: 1350 Aneroid pressure h: 1000 rpm : 0.00...1.00: 650 Speed Speed rpm Del.quantity cm3/: 198.0...204.0 1000 s: (195.0...207.0) LOW IDLE 1 Aneroid pressure h: 280 Control Lever position degrees: 14...22 Speed rpm : 500 Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) Testing: Aneroid pressure h: -Speed rpm : 100 Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Minimum rack trave: 6.40 : 300 Speed rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rom : 310...410 BREAKAWAY Speed TORQUE CONTROL 1st version Dimension a mm : 0.80 1mm rack travel less than Torque control curve - 1st version rpm : 750 full load rack tr: 9.90 1st speed rpm : 1140...1150 Rack travel in m: 11.60...11.70 Speed rpm : 1100 2nd speed Rack travel in m: 10.90...11.00 STARTING FUEL DELIVERY 3rd speed rpm : 865 Rack travel in m: 11.30...11.40 Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0) 4th speed rpm th speed rpm : 985 Rack travel in m: 10.90...11.20 Aneroid/Altitude LOW IDLE Compensator Test rpm : 300 Speed 1st version Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Setting pm : 500 hPa : 1000 Speed rpm cm3 : 8.00 Pressure Spread 1000 s: (12.00) Rack travel mm : 11.30...11.40 Measurement Remarks: 1/min: 500 : MAN-NR, 2-7911 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20

2nd pressure hPa : 85

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 : MAN 11,9a37 Test sheet Firing order : 24.11.89 : 24.5.89 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 402 036 077 Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 : 0 412 026 050 BASIC SETTING EP type number Governor Governor design. : RQ300/1100PA813-6 rpm: 750 1st speed : 0 421 801 466 Governer no. Rack travel in mm : 11.20...11.30 Customer-spec. information Del.quantity cm3/: 19.5...19.7 : MAN Customer 100 s: (19.2...20.0) : D2866TUH/001 Engine cm3 : 0.5: 213.0 Spread 1st version kW Rated speed : 2200 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. _, C . : 38...42 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread : 1 417 413 025 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 rpm : 750 : 1 688 901 019 assembly Speed Rack travel in mm : 14.70...16.30 **Opening** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rom : 750 Aneroid pressure h: 1000 : 195.0...197.0 Del.quantity 1000 : (192.0...200.0) Test lines : 1 680 750 067 cm3 : 5.00Spread 1000 : (9.00) Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 RATED SPEED 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed rpm : 750 Rack travel in mm : 15.5 per values BEGINNING OF DELIVERY

Testing:

Test pressure, bar: 30...32

1st rack travel in: 10.20 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.3 Testing: Speed rpm : 100 Minimum rack trave: 6.70 Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00 rpm : 390...430 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.60...11.70 2nd speed rpm : 1100 Rack travel in m: 11.50...11.70 Aneroid/Altitude Compensator Test 1st version Setting rom : 500 hPa : 1000 Speed rpm Pressure Rack travel mm : 11.20...11.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 190 Rack travel in m: 9.10...9.20 3rd pressure hPa : 350 Rack travel in m: 10.10...10.50 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MAN-NR. 2-7893

APPLICATION

Omnibus

B08

Speed

Aneroid pressure h: 1000

. rpm : 1100

Del.quantity cm3/: 204.0...208.0 1000 s: (201.0...211.0) BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 : MAN 11,9a38 Test sheet : 15.12.89 Edition : 9.6.89 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 078 Injection pump Pump designation: PES6P120A720/3LS470-Time to cyl. no. : 6 : 0 412 026 050 BASIC SETTING EP type number Governor Governor design. : RQ300/1100PA813-8 rpm: 750 1st speed : 0 421 801 483 Governer no. Rack travel in mm : 10.40...10.50 Customer-spec. information Del.quantity cm3/: 18.3...18.5 : MAN Customer 100 s: (18.0...18.8) : D2866LF/29D Engine cm3 : 0.51st version kW : 213.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm: 4.7...4.9 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. ., C : : 38...42 100 s: (0.9...2.1) cm3 : 0.8Overflow valve Spread : 1 417 413 025 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Degree: -2 Test nozzle holder : 1 688 901 019 rpm : 600 Speed assembly Rack travel in mm : 14.70...16.30 Opening | FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar 1st version Orifice plate diameter mm Speed rpm : 750 : 0,8 Aneroid pressure h: 1000 : 183.0...185.0 Del.quantity 1000 : (180.0...188.0) : 1 680 750 067 Test lines cm3 : 5.00 Spread 1000 : (9.00) Outside diameter x Wall thickness : 6.00X1.50X1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed per values rpm Rack travel in mm: 15.5

Testing:

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

1st rack travel in: 8.70 Aneroid pressure h: 1000 rpm : 1145...1160 Speed : 650 rpm Speed Del.quantity cm3/: 174.0...180.0 2nd rack travel in: 4.00 : 1180...1210 1000 s: (171.0...183.0) Speed rpm 4th rack travel in: 1300 Aneroid pressure h: 160 Speed rpm : 0.00...1.00 Speed rpm : 500 Del.quantity cm3/: 157.0...169.0 1000 s: (154.0...172.0) LOW IDLE 1 Setting point w/out bumper spring Aneroid pressure h: -: 500 : 300 Speed rpm rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Rack travel in mm: 4.8 Testing: rpm : 100 Speed Minimum rack trave: 6.30 **BREAKAWAY** Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00 1st version 1mm rack travel less than : 380...420 Speed rpm full load rack tr: 8.70 rpm : 1145...1160 TORQUE CONTROL Speed Dimension a mm : 0.35 Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 750 Rack travel in m: 10.40...10.50 2nd speed rpm : 1100 : 100 Speed rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) Rack travel in m: 9.70...9.90 Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 300 Rack travel in mm : 4.70...4.90 1st version Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Setting : 500 Speed rpm hPa : 1000 cm3 : 8.00 Pressure Spread : 10.40...10.50 1000 s: (12.00) Rack travel mm Remarks: Measurement 1/min: 500 : MAN-NR. 2-7760 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 85 Rack travel in m: 9.40...9.50 3rd pressure hPa : 160 Rack travel in m: 9.90...10.20 START CUT-OUT 1/min: 190 (210) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1100 Speed Del.quantity cm3/: 178.0...182.0

1000 s: (175.0...185.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MAN 11,9a39 Test sheet : 25.08.89 Edition : 2.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 036 079

Injection pump

Pump designation : PES6P120A720/3LS470-

EP type number : D 412 026 050

Governor

Governor design. : RQV300...1100PA876

: 0 421 813 661 Governer no.

Customer-spec. information : MAN Customer

: D2866LF Engine

1st version kW ·: 213.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

: 0-60-120-180-240-300 Phasing

Tolerance + - . . . : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.70...2.00 travel mm

rpm : 850 2nd speed

: 6.00...6.20 travel mm

3rd speed rpm : 1100

: 8.10...8.30 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0 1000 : (180.0...188.0)

Rack travel in m: 9.80...10.20 : 5.00 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 49...57 1st version Testing: Aneroid pressure h: 1000 1st rack travel in: 8.70 rpm : 1140...1150 rpm : 1100 Speed Speed Del.quantity cm3/: 178.0...182.0 2nd rack travel in: 4.00 1000 s: (175.0...185.0) rpm : 1205...1235 Speed 4th rack travel in: 1350 Aneroid pressure h: 1000 Speed rpm : 0.00...1.00 Speed rpm : 650 Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0) LOW IDLE 1 Aneroid pressure h: 160 Control lever Speed rpm : 500 Del.quantity cm3/ : 157.0...169.0 1000 s: (154.0...172.0) position degrees: 16...24 Testing: Aneroid pressure h: -Speed rom : 100 Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Minimum rack trave: 6.60 Speed rpm : 300 Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 310...410 BREAKAWAY Speed TORQUE CONTROL 1st version Dimension a mm : 0.80 1mm rack travel less than Torque control curve - 1st version rpm : 750 full load rack tr: 8.70 1st speed rpm : 1140...1150 Rack travel in m: 10.30...10.40 Speed : 1100 2nd speed rom Rack travel in m: 9.80...9.90 STARTING FUEL DELIVERY 3rd speed rpm : 925 Rack travel in m: 10.10...10.20 : 975 4th speed rpm Speed rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) Rack travel in m: 9.80...10.00 Aneroid/Altitude LOW IDLE Compensator Test rpm : 300 Rack travel in mm : 5.00...5.20 1st version Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Setting : 500 Speed rom hPa : 1000 cm3 : 8.00 Pressure Spread 1000 s: (12.00) : 10.30...10.40 Rack travel mm Remarks: Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 85 Rack travel in m: 9.40...9.50 3rd pressure hPa : 160

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 j4 : 14.07.89 Test sheet Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 036 726 Injection pump Pump designation : PES6P120A720/3LS3205 EP type number : 0 412 026 729 Governor Governor design. : RQ300/1100PA813-2 Governer no. : 0 421 801 416 Customer-spec. information Customer : MAN : D2866LX Engine 1st version kW : 265.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. , C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate : 0.8 diameter mm Test lines : 1 680 750 067

Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.00...13.10

Del.guantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread

cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -2

rpm : 650 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200

Del.quantity : 234.0...236.0 1000 : (231.0...239.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650 Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.80

: 1145...1160 Speed rpm 2nd rack travel in: 4.00 : 1190...1220 Speed rpm 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 4.2 Testing: Speed : 100 rom Minimum rack trave: 5.70 Speed rpm : 300 Rack travel in mm : 4.10...4.30 Rack travel in mm: 2.00 : 330...370 Speed rpm TORQUE CONTROL Dimension a mm : 0.20 Torque control curve – 1st version rpm : 1100 1st speed Rack travel in m: 12.80...12.90 d speed rpm : 700 2nd speed Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1200 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 110 Rack travel in m: 10.20...10.30 3rd pressure hPa : 470 Rack travel in m: 11.90...12.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

Speed

1st version

Aneroid pressure h: 1200

Aneroid pressure h: -

rpm

: 1100

Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0)

: 3.70...3.80 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 6-2-4-1-5-3 : MAN 11,9 j Test sheet : 11.05.89 : 28.11.88 Edition Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasina Tolerance + - ., .: 0.50 (0.75)Combination no. : 0 402 036 726 Time to cyl. no. : 6 Injection pump Pump designation : PES6P120A720LS3205 : 0 412 026 729 BASIC SETTING EP type number Governor Governor design. : RQ300/1100PA813-2 rpm: 700 1st speed : 0 421 801 416 Governer no. Rack travel in mm : 13.00...13.10 Customer-spec. information Del.quantity cm3/: 23.4...23.6 Customer : MAN 100 s: (23.1...23.9) : D2866LX Engine : 265.0 cm3 : 0.51st version kW Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) inlet temp. _, C . : 38...42 cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 rpm : 650 assembly : 1 688 901 019 Speed Rack travel in mm : 19.20...20.80 Openina FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar 1st version Orifice plate rpm : 700 diameter mm : 0,8 Speed Aneroid pressure h: 1200 : 234.0...236.0 Del.quantity 1000 : (231.0...239.0) : 1 680 750 067 Test Lines : 5.00 cm3 Spread 1000 : (9.00) Outside diameter x Wall thickness : 6.00X1.50X1000 RATED SPEED x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: Speed rpm : 650 Rack travel in mm : 20.0 per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing:

1st rack travel in: 11.80

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 : 1190...1220 Speed rem 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 4.2 Testina: Speed : 100 rom Minimum rack trave: 5.70 : 300 Speed rpm Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 Speed rpm : 330...370 TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.80...12.90 2nd speed rpm : 700 Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1200 Pressure Rack travel mm : 13.00...13.10 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.20...10.30 3rd pressure hPa : 470 Rack travel in m: 11.90...12.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1100 Speed rpm Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0)

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/: 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

Aneroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MAN 11,9 k3 Test sheet Edition : 15.08.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 036 727

Injection pump

Pump designation: PES6P120A720/3LS3205

: 0 412 026 729 EP type number

Governor

Governor design. : RQV300...1100PA876-1 Governor no. : 0 421 813 670

Customer-spec. information : MAN Customer

Engine : D2866LX

: 265.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.30 travel mm

rpm : 450 2nd speed : 3.10...3.50 rpm : 900 travel mm

3rd speed

: 6.00...6.40 travel mm

4th speed rpm : 1100 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1175

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200

Del.quantity : 234.0...239.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED

1st version Control Lever

position degrees: 50...58

Testina:

1st rack travel in: 11.80 rpm : 1140...1150 Speed 2nd rack travel in: 4.00

Speed rpm : 1250...1280

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 13...21

Testina:

: 100 Speed rpm Minimum rack trave: 5.70 : 300 Speed man

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 300...400 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed

st speed rpm : 1100 Rack travel in m: 12.80...12.90

: 700 2nd speed rpm

Rack travel in m: 13.00...13.10

3rd speed rpm : 1000

Rack travel in m: 12.90...13.00

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 13.00...13.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 110

Rack travel in m: 10.20...10.30

3rd pressure hPa : 470

Rack travel in m: 11.90...12.30

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1100 Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1140...1150 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 1000 s: (12.00) Spread

Remarks:

: MAN-NR. 7890

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3,85) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 6-2-4-1-5-3 Test sheet : MAN 11,9 k : 11.05.89 Edition Replaces : 4.11.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Combination no. : 0 402 036 727 Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720LS3205 : 0 412 026 729 BASIC SETTING EP type number Governor Governor design. : RQV300...1100PA876-1 rpm: 700 1st speed : 0 421 813 670 Governer no. Rack travel in mm : 13.00...13.10 Customer-spec. information Del.quantity cm3/: 23.4...23.6 Customer : MAN 100 s: (23.1...23.9) : D2866LX Engine : 265.0 : 2200 Spread cm3 : 0.51st version kW Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm: 4.1...4.3 Test oil Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) inlet temp. _, C : 38...42 cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.10...1.30 **Opening** travel mm 2nd speed rpm : 450 pressure, bar : 207...210 travel mm : 3.10...3.50 3rd speed rpm : 900 Orifice plate travel mm : 6.00...6.40 : 0,8 diameter mm 4th speed rpm : 1100 : 7.70...7.90 travel mm : 1 680 750 067 Test Lines GUIDE SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 rpm : 1175 : 6.00X1.50X1000 Speed x Length mm Rack travel in mm : 15.20...17.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values

Speed

rpm : 700

Aneroid pressure h: 1200 Del.quantity : 234.0...236.0 1000 : (231.0...239.0)

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 50...58

Testing:

1st rack travel in: 11.80

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1250...1280

4th rack travel in: 1400 Speed rpm: 0.00...1.00

LOW IDLE 1

Control Lever position degrees: 13...21

Testing:

: 100 Speed rpm Minimum rack trave: 5.70 Speed rpm : 300

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 300...400 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed

rt speed rpm : 1100 Rack travel in m: 12.80...12.90

: 700 rpm 2nd speed

Rack travel in m: 13.00...13.10

rpm : 1000 3rd speed

Rack travel in m: 12.90...13.00

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed man hPa : 1200 Pressure

: 13.00...13.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 110

Rack travel in m: 10.20...10.30

3rd pressure hPa : 470

Rack travel in m: 11.90...12.30

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1100 Speed

Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0)

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1140...1150 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.10...4.30

Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k4 Edition : 15.08.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 036 728

Injection pump

Pump designation : PES6P120A720/3LS3205

EP type number : 0 412 026 732

Governor

Governor design. : RQV300...1100PA876-2

: 0 421 813 712 Governer no.

Customer-spec. information Customer : MAN

: D2866LXG Engine

: 265.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : C,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 22.8...23.0

100 s: (22.5...23.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.60...2.00 travel mm

2nd speed rpm: 450

: 2.80...3.20 travel mm

rpm : 800 3rd speed

: 5.30...5.70 travel mm

rpm : 1100 4th speed

: 8.00...8.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 228.0...230.0 1000 : (225.0...233.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 51...59 Testing: 1st rack travel in: 11.80 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Testina: Speed : 100 rom Minimum rack trave: 5.70 : 300 rom Rack travel in mm : 4.10...4.30 CONSTANT REGULATION rpm : 300...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man hPa : 1200 Pressure : 12.80...12.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 150 Rack travel in m: 10.10...10.20 3rd pressure hPa : 510 Rack travel in m: 11.60...12.00 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00

oread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7913

822

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 6-2-4-1-5-3 : MAN 11,9 k1 Test sheet : 07.04.89 Edition : 30.9.88 Replaces Test oil : 0-60-120-180-240-300 : ISO-4113 Phasing Combination no. : 0 402 036 728 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 Injection pump Pump designation : PES6P120A720LS3205-1 EP type number : 0 412 026 732 BASIC SETTING Governor Governor design. : RQV300...1100PA876-2. rpm: 700 1st speed Governer no. : 0 421 813 712 Rack travel in mm : 12.80...12.90 Customer spec. information Del.guantity cm3/: 22.8...23.0 : MAN Customer 100 s: (22.5...23.3) : D2866LXG Engine : 265.0 Spread cm3 : 0.51st version kW : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 4.1...4.3 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp..., C . : 38...42 100 s: (1.4...2.6) Overflow valve cm3 : 0.8Spread 100 s: (1.2) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 1.60...2.00 travel mm **Openina** pressure, bar : 207...210 2nd speed rpm : 450 : 2.80...3.20 travel mm 3rd speed rpm : 800 Orifice plate : 5.30...5.70 travel mm : 0,8 diameter mm 4th speed rpm : 1100 : 8.00...8.20 travel mm Test Lines : 1 680 750 067 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1120 : 6.00x1.50x1000 x Length mm Rack travel in mm : 15.20...17.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. per values 1st version Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 228.0...230.0

1000 : (225.0...233.0)

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.80 rpm : 1140...1150 Speed 2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 13...21

Testing:

Speed : 100 rpm Minimum rack trave: 5.70 : 300 Speed COM

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 12.80...12.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 150 Rack travel in m: 10.10...10.20

3rd pressure hPa : 510

Rack travel in m: 11.60...12.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 1100 Speed rpm

Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1140...1150 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7913

: 3.70...3.80 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00 Note remarks : 6-2-4-1-5-3 Firing order : MAN 11,9 j2 : 14.07.89 Test sheet Edition Replaces : 31.3.89 : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 729 Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720LS3205 EP type number : 0 412 026 729 BASIC SETTING Governor Governor design: RQ300/1100PA813-7 1st speed rom: 700 : 0 421 801 474 Governer no. Rack travel in mm : 13.20...13.30 Customer-spec. information Del.quantity cm3/: 23.6...23.8 Customer : MAN 100 s: (23.3...24.1) Engine : D2866LUH 1st version kW : 273.0 Spread cm3 : 0.5: 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm : 4.3...4.5

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 Test oil inlet temp. _, C . : 38...42 Overflow valve 100 s: (1.2) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Degree: -2 Test nozzle holder rpm : 650 : 1 688 901 019 Speed assembly Rack travel in mm : 14.70...16.30 Opening FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar Orifice plate 1st version diameter mm : 0,8 Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 236.0...238.0 1000 : (233.0...241.0) Spread cm3 : 5.00 Test lines : 1 680 750 067 1000 : (9.00) Outside diameter x Wall thickness : 6.00x1.50x1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant.

> Speed rpm : 650 Rack travel in mm : 15.5

1st rack travel in: 11.80

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

: 1145...1160 Speed rpm 2nd rack travel in: 4.00 : 1190...1220 Speed rpm 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 4.4 Testina: Speed : 100 rom Minimum rack trave: 5.90 : 300 rpm Rack travel in mm : 4.30...4.50 Rack travel in mm: 2.00 : 380...420 Speed rpm TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 12.80...12.90 rpm : 700 2nd speed Rack travel in m: 14.00...14.20 3rd speed rpm : 885 Rack travel in m: 13.30...13.60 in speed rpm : 935 4th speed Rack travel in m: 13.00...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1200 Pressure Rack travel mm : 12.20...12.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.30...9.50 2nd pressure hPa : 190 Rack travel in m: 9.70...9.80 3rd pressure hPa : 520 Rack travel in m: 11.80...12.10 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Speed : 1100 rpm Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1145...1160 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 230.0...250.0 1000 s: (226.0...254.0) LOW IDLE Speed rpm Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 2-7946 **APPLICATION Omnibus**

Aneroid pressure h: 1200

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 n Test sheet : 15.08.89 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 036 730 Injection pump : 0 412 026 734 EP type number Governor Governor design. : RQ300/1100PA813-9 : 0 421 801 487 Governer no. Customer-spec. information Customer : MAN Engine : D2866LX 1st version k₩ : 265.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. ., C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** pressure, bar : 207...210 Orifice plate : 0.8 diameter mm Test lines : 1 680 750 067 Outside diameter

Pump designation : PES6P120A720/3LS3237 x Wall thickness x Length mm : 6.00X1.50X1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.70...3.80 : (3.65...3.85) Prestroke mm Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 23.4...23.6 100 s: (23.1...23.9) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.02nd speed Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8 Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 650 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 234.0...236.0 1000 : (231.0...239.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Setting point: rpm : 650 Speed Rack travel in mm: 20.0 Testing:

1st rack travel in: 11.80

rpm : 1145...1160 Speed 2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350 rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 4.2

Testing:

Speed : 100 rpm Minimum rack trave: 5.70 Speed rpm : 300

Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00

: 330...370 Speed rom

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90 nd speed rpm : 700 Rack travel in m: 13.30...13.50

2nd speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1200 Pressure

Rack travel mm : 13.00...13.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 110 Rack travel in m: 10.20...10.30

3rd pressure hPa : 470

Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 1100 Speed rpm

Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1145...1160 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm: 300
Rack travel in mm: 4.10...4.30
Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

B28

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 k2 Test sheet : 03.11.89 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 036 731 Injection pump Pump designation : PES6P120A720/3LS3205 : 0 412 026 729 EP type number Governor Governor design. : RQV300...950PA876-3 : 0 421 813 807 Governer no. Customer—spec. information Customer : MAN Engine : D2866LXF/339 : 250.0 1st version kW : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00X1.50X1000 x Lenath mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm : 3.70...3.80 : (3.65...3.85)
Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 23.0...23.2 100 s: (22.7...23.5) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 1.00...1.40 travel mm 2nd speed rpm: 800 travel mm : 5.00...5.40 3rd speed rpm: 1000 : 7.80...8.20 travel mm 4th speed rpm: 1100 : 9.10...9.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1000 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm: 700 Aneroid pressure h: 1200 Del.quantity : 230.0...235.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 50...58

Testing:

1st rack travel in: 11.70

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1070...1100 Speed

4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 13...21

Testing:

: 200 Speed rpm Minimum rack trave: 6.00 : 300 Speed rom

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 300...400 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 12.70...12.80 2nd speed rpm : 700 Rack travel in m: 13.20...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

pm : 500 hPa : 1200 Speed man

Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 150
Rack travel in m: 9.90...10.00
3rd pressure hPa : 510
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 950
Del.quantity cm3/: 228.0...232.0
1000 s: (225.0...235.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 990...1000 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 210.0...230.0

1000 s: (206.0...234.0)

LOW IDLE

Speed rpm: 300
Rack travel in mm: 4.10...4.30
Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MAN-NR. 2-7942

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 13 Test sheet : 09.11.89 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 036 732

Injection pump Pump designation: PES6P120A720/3LS3205 EP type number : 0 412 026 729 Governor

Governor design. : RQ300/950PA813-10 : 0 421 801 493 Governer no.

Customer-spec. information Customer : MAN

: D2866LXF/A39 Engine

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm: 9.00...12.00

Firing order: 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -2 rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200

Del.quantity : 250.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70

rpm : 995...1010 Speed 2nd rack travel in: 4.00 : 1035...1065 Speed וווכרו 4th rack travel in: 1150 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 4.2 Testing: Speed : 100 L DW Minimum rack trave: 5.70 : 300 rpm Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 : 350...390 Speed rom TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 12.70...12.80 : 700 rpm 2nd speed Rack travel in m: 13.20...13.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1200 Pressure Rack travel mm : 12.90...13.00 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.60...9.80 2nd pressure hPa : 150 Rack travel in m: 9.90...10.00 3rd pressure hPa : 510 Rack travel in m: 11.60...12.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm: 950
Del.quantity cm3/: 228.0...232.0
1000 s: (225.0...235.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rpm : 995...1010

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7962

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 10,6 b : 15.12.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 044 021

Injection pump

Pump designation : PES4P120A320RS451 EP type number : 0 412 024 020

Governor

Governor design. : RQV350...900PA934-2

: 0 421 813 818 Governer no.

Customer-spec. information : BAUDOUTN Customer

: DNP4 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 7.6...7.8

Del.quantity cm3/: 2.8...3.4

100 s: (-)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 0.80...1.20 travel mm

rpm : 500 2nd speed : 3.00...3.40 travel mm

3rd speed rpm : 750

: 5.80...6.20 travel mm

rpm : 900 4th speed

: 7.60...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 940

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 197.0...199.0 Del.quantity

1000 : (194.0...202.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:
1st rack travel in: 11.60
Speed rpm: 940...950
2nd rack travel in: 4.00

rpm : 1000...1030 Speed

4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 29...37

Testing:

Speed rpm : 100 Minimum rack trave: 9.20 Speed rpm : 350 Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

rpm : 350...440 Speed

START CUT-OUT

Speed 1/min: 300 (320)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 940...950 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 175.0...195.0 1000 s: (171.0...199.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: FIA 13,8 s2 Test sheet Edition : 07.02.89

Replaces

: ISO-4113 Test oil

: 0 402 046 115 Combination no.

Injection pump

Pump designation : PES6P120A820LS249 : 0 412 026 024 EP type number

Governor

Governor design.: RQV300...925PA204/4R

: D 421 813 159 Governer no.

Customer—spec. information Customer : IVECO-FIAT

Engine : 8217.12.024

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Opening |

pressure, bar : 172...175

: 1 680 750 060 Test lines

Outside diameter x Wall thickness

: 8.00X2.00X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 925

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 18.5...18.9

100 s: (18.2...19.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.2...2.8 100 s: (1.9...3.1)

cm3 : 0.6 100 s: (0.9) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.90...2.30 travel mm 2nd speed rpm : 400

: 3.10...3.70 travel mm

rpm : 800 3rd speed

: 6.50...6.80 travel mm

: 925 4th speed rpm

: 7.80...8.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1040 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 925 Speed

: 185.0...189.0 Del.quantity

1000 : (182.0...192.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 9.50 Speed rpm : 965...975 2nd rack travel in: 4.00

Speed rpm : 1040...1070 4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 300...395 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 rpm : 965...975 Speed

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Rail car

: 3.00...3.10 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 6-2-4-1-5-3 Test sheet : MB 11,4 a 21.04.89 14.8.87 Edition Replaces : ISO-4113 Phasing : 0-60-120-180-240-300 Test oil Combination no. : 0 402 046 148 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 6 Pump designation : PES6P100A820LS351 : 0 412 006 028 BASIC SETTING EP type number Governor Governor design. : RQ300/1100PA327R rpm: 1100 1st speed : 0 421 801 062 Governer no. Rack travel in mm : 13.20...13.30 Customer-spec. information Del.quantity cm3/: 12.2...12.4 : DAIMLER-BENZ Customer 100 s: (12.0...12.6) : OM 407 Engine cm3 : 0.31st version kW : 176.5 Spread : 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.5...7.7 Test oil Del.quantity cm3/: 0.6...1.2 inlet temp. _, C . : 38...42 100 s: (0.3...1.4) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Overflow Degree: -1 rpm : 500 quantity min. 1/h: 100...120 Speed Rack travel in mm : 14.30...15.10 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly 1st version Openina rpm : 1100 pressure, bar : 172...175 Speed 1000 : (120.0...124.0) cm3 : 3.00 1000 : (6.00) Del.quantity Test lines : 1 680 750 015 Spread Outside diameter RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Speed rpm : 500 Rack travel in mm : 14.7 Set equal delivery quant. per values BEGINNING OF DELIVERY Testing: 1st rack travel in: 12.20 Test pressure, bar: 25...27

rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.6

Testing:

rpm : 100 Speed Minimum rack trave: 9.60

Speed rpm : 300
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 370...410

RACK STOP ADJUSTMENT

rpm : 500 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (131.0...159.0)

Remarks:

APPLICATION

Omnibus

: 3.00...3.10 : (2.95...3.15) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MB 11,4 g : 21.04.89 Edition : 11.85 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 402 046 215 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 Injection pump Pump designation : PES6P110A820LS422 : 0 412 016 057 BASIC SETTING EP type number Governor Governor design. : RQ300/1100PA327-2 rpm: 1100 1st speed : 0 421 801 136 Governer no. Rack travel in mm : 11.70...11.80 Customer-spec. information Del.quantity cm3/: 13.0...13.2 : DAIMLER-BENZ Customer 100 s: (12.7...13.4) : OM 407 Engine cm3 : 0.4: 176.5 Spread 1st version kW : 2200 Rated speed 100 s: (0.7) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.6...7.8 Test oil inlet temp. , C : 38...42 Del.quantity cm3/: -100 s: (-) cm3 : 0.4Overflow valve Spread 100 s: (-) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 Speed rpm: 600 Rack travel in mm: 13.00...14.00 quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly 1st version Opening rpm : 1100 pressure, bar : 172...175 Speed 130.0...132.0 1000 : (127.5...134.5) Del.quantity cm3 : 4.00 1000 : (7.50) Test lines : 1 680 750 015 Spread Outside diameter RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Speed rpm : 600 Rack travel in mm : 13.5 Set equal delivery quant. per values ____ Testing: BEGINNING OF DELIVERY

1st rack travel in: 10.70

Speed

rpm : 1140...1150

2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.7 Testing: rpm : 100 Speed Minimum rack trave: 10.00 Speed rpm: 300
Rack travel in mm: 7.60...7.80
Rack travel in mm: 2.00
Speed rpm: 375...415 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 119.0...123.0 1000 s: (116.0...126.0) Spread cm3 : 6.00 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 7.60...7.80 cm3 : 4.00 Spread 1000 s: (-) Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,4 h 3 : 21.04.89 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 046 218 Injection pump Pump designation : PES6P110A820LS422 : 0 412 016 057 EP type number Governor Governor design. : RQ300/1100PA327-1 : 0 421 801 140 Governer no. Customer-spec. information Customer : DAIMLER-BENZ : OM 407 Engine : 147.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 10.3...10.5 100 s: (10.0...10.8) Spread cm3 : 0.4100 s: (0.8) 2nd speed rpm : 300.0 Rack travel in mm : 8.2...8.4 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 600 Speed Rack travel in mm : 13.00...14.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed : 103.0...105.0 Del.quantity 1000 : (100.0...108.0) cm3 : 4.00Spread 1000 : (8.00) RATED SPEED 1st version Setting point: rom : 600 Speed Rack travel in mm: 13.5 Testing: 1st rack travel in: 9.60 rpm : 1140...1150 Speed

Prestroke mm

: 3.00...3.10 : (2.95...3.15)

2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.1 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 rpm : 350...390 Speed FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 500

RACK STOP ADJUSTMENT

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

C14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : RVI 12,0 c Test sheet : 10.02.89 Edition : 12.9.86 Replaces : ISO-4113 Test oil Combination no. : 0 402 046 219 Injection pump Pump designation : PES6P120A320RS426 EP type number : 0 412 026 039 Governor Governor design. : RQV250...1100PA570 Governer no. : 0 421 813 295 Customer-spec. information Customer : RVI Engine : MIDS 063540 : 195.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _, C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Openina** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Speed Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm (A) Injection pump setting values Speed Insp. values in parentheses Set equal delivery quant. per values

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4: 0-60-120-180-240-300 Phasing Tolerance + - . . : 0.50 (0.75)BASIC SETTING 1st speed rpm: 650 Rack travel in mm : 10.30...10.40 Del.quantity cm3/: 17.9...18.1 100 s: (17.6...18.4) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm : 3.9...4.1 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.50...1.60 travel mm 2nd speed rpm : 800 travel mm : 4.70...4.90 rpm : 1100 3rd speed travel mm : 6.80...7.00 GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1270 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 650 Aneroid pressure h: 700 : 179.0...181.0 Del.quantity 1000 : (176.0...184.0) : 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

1st version Control Lever position degrees: 57...65 Testina: 1st rack travel in: 8.00 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 5...13 Testing: : 200 Speed rpm Minimum rack trave: 5.10 : 250 Speed rpm Rack travel in mm : 3.90...4.10 CONSTANT REGULATION rpm : 275...400 Speed TORQUE CONTROL Dimension a mm : 1.20 Torque control curve - 1st version 1st speed rpm : 650 Rack travel in m: 10.30...10.40 2nd speed rpm : 1100 Rack travel in m: 8.90...9.10 3rd speed rpm : 1020 Rack travel in m: 9.30...9.40 rpm : 890 4th speed Rack travel in m: 9.90...10.10 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rom hPa : 700 Pressure : 10.30...10.40 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : Rack travel in m: 8.30...8.50

1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 1100 Speed rpm Del.quantity cm3/: 162.0...168.0 1000 s: (159.0...171.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1145...1155 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 125.0...145.0 1000 s: (121.0...149.0) LOW IDLE Speed rpm: 250
Rack travel in mm: 3.90...4.10
Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Start-of-delivery mark 12, cam angle after start of delivery cyl. 1.

START CUT-OUT

2nd pressure hPa : 290

Rack travel in m: 9.90...10.00 3rd pressure hPa : 245 Rack travel in m: 8.90...9.10

Note remarks

Test sheet : MB 11,4 L 1 : 21.04.89 Edition : 11.85 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 228

Injection pump

Pump designation : PES6P110A820LS442 : 0 412 016 060

EP type number

Governor Governor design. : RQ300/1100PA327-2

Governer no.

: 0 421 801 136

Customer-spec. information

Customer : DAIMLER-BENZ

: 407 H Engine

: 177.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30 : (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 12.8...13.0

100 s: (12.5...13.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.1)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600 Speed

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 128.0...130.0 Del.quantity

1000 : (125.5...132.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 13.5

Testina:

1st rack travel in: 10.30

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1175...1205 4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.8

Testing:

Speed rpm : 100 Minimum rack trave: 9.40

Speed rpm: 300
Rack travel in mm: 7.70...7.90
Rack travel in mm: 2.00
Speed rpm: 365...405

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 110.0...114.0

1000 s: (107.0...117.0)

Spread cm3 : -

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 peed rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm_ : 100 Speed

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

Test sheet : MB 11,4 L20 Edition : 21.04.89

Replaces

Test oil : TSO-4113

Combination no. : 0 402 046 234

Injection pump

Pump designation : PES6P110A820LS442

EP type number : 0 412 016 060

Governor

Governor design. : RQ300/1100PA327-5

: 0 421 801 163 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 407 STEHEND Engine

1st version kW : 162.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp.., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.6...11.8

100 s: (11.3...12.0)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.2 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 116.0...118.0 Del.quantity

1000 : (113.5...120.5)

cm3 : 4.00 Spread

1000 : (8.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom Rack travel in mm: 13.5

Testing:

1st rack travel in: 10.00 Speed rpm : 1140...1150

2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.1 Testing: Speed : 100 rpm Minimum rack trave: 9.50 rpm : 300 Speed Rack travel in mm : 8.00...8.20 Rack travel in mm : 2.00 Speed rpm : 375...415 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 93.0...97.0 1000 s: (90.0...100.0) cm3 : 6.00 Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than

full load rack tr: 10.00 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : RVI 9,8 a 3 Test sheet Edition : 01.09.89 : 11.85 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing : 0 402 046 300 Combination no. Tolerance + - ... : 0.50 (0.75)BASIC SETTING Injection pump Pump designation : PES6P120A320RS419 : 0 412 026 037 rpm: 1100 EP type number 1st speed Governor Governor design. : RQV275...1100PA495-5 Rack travel in mm : 9.00...9.10 : 0 421 813 446 Governer no. Del.quantity cm3/: 16.2...16.4 Customer spec. information : RVI 100 s: (15.9...16.7) Customer : MIDR 062045 Engine Spread cm3 : 0.5: 191.0 100 s: (0.9) 1st version kW : 2200 Rated speed rpm : 275.0 2nd speed Rack travel in mm: 4.6...4.8 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Test oil cm3 : 0.8 inlet temp. ., C . : 38...42 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 1.00...1.20 Test nozzle holder : 1 688 901 019 assembly rpm : 450 2nd speed : 3.40...3.80 travel mm Opening : 207...210 rpm : 850 pressure, bar 3rd speed : 6.10...6.30 travel mm rpm : 1100 Orifice plate 4th speed : 8.00...8.20 diameter mm travel mm : 0,8 GUIDE SLEEVE POSITION Test lines : 1 680 750 067 Control-lever position Degree: -1 rpm : 1150 Outside diameter Speed Rack travel in mm : 15.20...17.80 x Wall thickness : 6.00X1.50X1000 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1100 Aneroid pressure h: 700 per values ____ : 162.0...164.0 Del.quantity

1000 : (159.0...167.0)

: 5.00

: (9.00)

cm3

1000

Spread

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 8.00 Speed rpm : 1170...1180 2nd rack travel in: 4.00 rpm : 1225...1255 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 5...13 Testina: Speed : 200 rpm Minimum rack trave: 6.30 : 275 Speed rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 285...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Pressure : 9.00...9.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 7.80...8.00 2nd pressure hPa : 220 Rack travel in m: 8.60...8.70 3rd pressure hPa : 195 Rack travel in m: 8.10...8.30 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 102.0...104.0
1000 s: (99.0...107.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1170...1180 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) LOW IDLE Speed rpm : 275 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Speed

1st version

Aneroid pressure h: 700

rpm

: 700

Del.quantity cm3/: 150.0...156.0 1000 s: (147.0...159.0)

Note remarks

Test sheet : RVI 9,8 a 6 : 02.01.90 Edition Replaces : 16.12.88 Test oil : ISO-4113

: 0 402 046 313 Combination no.

Injection pump

Pump designation : PES6P120A320RS419 : 0 412 026 037 EP type number

Governor

Governor design. : RQV275...1050PA495-8

: D 421 813 482 Governer no.

Customer-spec. information Customer : RVI

: MIDSO62045 Engine

: 169.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 10.30...10.40

Del.guantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 : 1.00...1.20 1st speed travel mm

2nd speed rpm : 450 : 3.30...3.80 travel mm

rpm : 800 3rd speed

: 5.70...6.00 travel mm

rpm : 1050 4th speed

: 7.60...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 700

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

: 5.00 Spread cm3 1000 : (9.00)

C23

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.30

Speed rpm : 1125...1135 2nd rack travel in: 4.00

Speed rpm: 1200...1230 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 60...64

Testing:

: 200 Speed rom Minimum rack trave: 6.60 : 275 Speed rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rbm : 275...390 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

om : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 10.30...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 360

Rack travel in m: 9.80...9.90

3rd pressure hPa : 160

Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 153.0...159.0

1000 s: (150.0...162.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 109.0...111.0

1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 1125...1135 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...180.0 1000 s: (156.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 25.0...31.0

1000 s: (22.0...34.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5, cam angle

after start of delivery cyl. 1

APPLICATION

Omnibus

Note remarks

Test sheet : RVI 8,8 d 6 : 02.10.89 : 29.3.89 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 046 329

Injection pump

Pump designation : PES6P120A320RS419-2 EP type number : 0 412 026 048

Governor

Governor design. : RQ275/950PA843 : 0 421 801 378 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDS/PS062045D/A

: 129.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - . .: 0.50 (0.75)

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 8.00...8.10

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 525 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

: 104.0...106.0 Del.quantity 1000 : (101.0...109.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 6.50

rpm : 1015...1030 Speed

2nd rack travel in: 4.00

rpm : 1040...1070 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

: 275 Speed rpm : 275 Rack travel in mm : 4.4

Testing:

Speed : 200 rpm Minimum rack trave: 5.20 Speed rpm : 275

Rack travel in mm : 3.50...3.70 Rack travel in mm : 2.00

rpm : 300...340 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve – 1st version

1st speed rpm : 500

Rack travel in m: 8.00...8.10

2nd speed

nd speed rpm : 950 Rack travel in m: 7.40...7.50

3rd speed rpm : 775 Rack travel in m: 7.60...7.80

START CUT-OUT

1/min: 210 (230) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950 Del.quantity cm3/ : 124.0...128.0 1000 s: (121.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 6.50

Speed rpm : 1015...1030

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 3.50...3.70

Remarks:

€26

Start-of-delivery mark 9.5, cam angle after start of delivery cyl. 1

APPLICATION

Omnibus

Note remarks

: RVI 9,8 c : 06.04.88 Test sheet Edition : 26.2.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 331

Injection pump

Pump designation : PES6P120A320RS514 : 0 412 026 052 EP type number

Governor

Governor design. : RQV275...1000PA495-9

: 0 421 813 672 Governer no.

Customer-spec. information : RVI Customer

: MIDRO62045 K Engine

1st version kW : 176.5 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm : 550 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275 : 1.40...1.60 travel mm

2nd speed rpm : 500

travel mm : 3.80...4.30 rpm : 800 3rd speed

: 5.70...6.10 travel mm

rpm : 1000 4th speed

: 7.10...7.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 550 Speed

Aneroid pressure h: 1000

Del.quantity : 165.0...167.0 1000 : (162.0...170.0)

: 5.00 cm3 Spread

1000 : (9.00) RATED SPEED

1st version Control Lever

position degrees: 47...55

Testing:

1st rack travel in: 9.00

rpm : 1075...1085 Speed

2nd rack travel in: 4.00

Speed rpm: 1165...1195 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 14...22

Testina:

: 200 Speed rpm Minimum rack trave: 7.20 : 275 rom

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 285...400 Speed

TORQUE CONTROL

Dimension a mm : 1.50

Torque control curve - 1st version

rpm : 550 1st speed

Rack travel in m: 11.50...11.60

: 1000 2nd speed rpm

Rack travel in m: 9.90...10.00

rpm : 730 3rd speed

Rack travel in m: 11.10...11.20

: 850 4th speed rpm

Rack travel in m: 10.30...10.50

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1000 Pressure

: 11.50...11.60 Rack travel mm

Measurement

Speed

meed 1/min: 500 Rack travel in m: 9.10...9.30

2nd pressure hPa : 280

Rack travel in m: 11.10...11.20

3rd pressure hPa : 120

Rack travel in m: 9.80...10.00

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

: 1000 Speed rpm Del.quantity cm3/: 153.0...157.0

1000 s: (150.0...160.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 106.0...108.0

1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1075...1085 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 135.0...165.0

1000 s: (135.0...165.0)

LOW IDLE

Speed rpm

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 14.0...20.0

1000 s: (11.0...23.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

Test sheet : RVI 9,8 a 8 : 10.02.89 Edition : 5.8.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 332

Injection pump

Pump designation : PES6P120A320RS419 : 0 412 026 037 EP type number

Governor

Governor design. : RQ275/1050PA844-1

: 0 421 801 421 Governer no.

Customer-spec. information : RVI Customer

: MIPRO62045A Engine

1st version kW : 210.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...<u>1</u>2.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 700

: 185.0...187.0 Del.quantity 1000 : (182.0...190.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point: : 600 Speed rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1110...1125

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Speed Rack travel in mm: 5.9

Testing:

Speed : 200 rpm Minimum rack trave: 5.90 rpm : 275

Rack travel in mm: 4.10...4.30 Rack travel in mm: 2.00 Speed rpm: 310...350

Aneroid/Altitude Compensator Test

1st version

Setting

rom : 500 hPa : 700 Speed rpm Pressure

: 10.10...10.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.20

2nd pressure hPa : 360

Rack travel in m: 9.60...9.70

3rd pressure hPa : 160

Rack travel in m: 8.60...8.80

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 650 Speed

Del.quantity cm3/: 168.0...174.0 1000 s: (165.0...177.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 105.0...107.0 1000 s: (102.0...110.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 9.10

rpm : 1110...1125 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 4.10...4.30

Remarks:

Start-of-delivery mark 9.5, cam angle after start of delivery cyl. 1

APPLICATION

Omnibus

Note remarks

Test sheet : RVI 9,8 d : 10.02,89 Edition : 30.9.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 333

Injection pump

Pump designation : PES6P120A320RS514 EP type number : 0 412 026 052

Governor

Governor design. : RQV375...900PA885

: 0 421 813 689 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDRO62045

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2,90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 375.0 Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.00...1.20 travel mm

2nd speed rpm : 500

: 3.00...3.40 travel mm

rpm : 750 3rd speed

: 5.90...6.30 travel mm

rpm : 900 4th speed

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 930 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 206.0...208.0 Del.quantity

1000 : (203.0...211.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 11.70 rpm : 940...950 Speed 2nd rack travel in: 4.00 : 1015...1045 Speed rpm 4th rack travel in: 1150 : 0.00...1.00 Speed rom LOW IDLE 1 Control lever position degrees: 12...20 Testing: Speed : 200 rpm Minimum rack trave: 6.80 Speed rpm : 375 Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 420...590 Speed START CUT-OUT 1/min: 295 (315) Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 940...950 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) LOW IDLE Speed rpm : 375
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 14.0...20.0 1000 s: (11.0...23.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

APPLICATION

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Note remarks : MAN 11,9 L Test sheet : 15.08.89 Edition : 7.4.89 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Combination no. : 0 402 046 336 Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS517 EP type number : 0 412 026 054 BASIC SETTING Governor Governor design. : RQ750PA895 1st speed rpm: 700 : 0 421 801 447 Governer no. Rack travel in mm : 11.80...11.90 Customer-spec. information Del.guantity cm3/: 21.0...21.2 Customer : MAN 100 s: (20.7...21.5) Engine : D2866TUE cm3 : 0.51st version kW : 190.0 Spread : 1500 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 400.0 2nd speed Rack travel in mm : 4.4...4.6 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1) Test oil inlet temp. .. C . : 38...42 cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 375 1st speed **Opening** FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar Orifice plate 1st version rpm : 700 diameter mm : 0,8 Speed : 210.0...212.0 Del.quantity 1000 : (207.0...215.0) : 5.00 Test lines : 1 680 750 067 cm3 Spread 1000 : (9.00) Outside diameter RATED SPEED x Wall thickness : 6.00X1.50X1000 x Length mm 1st version (A) Injection pump setting values Testing: Insp. values in parentheses Set equal delivery quant. 1st rack travel in: 10.80 rpm : 750...755 Speed per values ____ 2nd rack travel in: 4.00 Speed rpm : 788...801

4th rack travel in: 900

Speed

rpm : 0.00...1.00

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

: MAN-NR. 2-7849

APPLICATION

Generator

Note remarks

: RVI 9,8 g : 02.10.89 : 29.3.89 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 337

Injection pump

Pump designation : PES6P120A320RS520 EP type number : 0 412 026 056

Governor

Governor design. : RQV275...1050PA906

: 0 421 813 724 Governer no.

Customer-spec. information Customer : RVI

: MIDRO62045D Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + -, .: 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.20 travel mm

rpm : 450 2nd speed

: 3.30...3.80 travel mm

: 800 3rd speed rpm

: 5.70...6.00 travel mm

: 1050 4th speed rpm

travel mm : 7.60...7.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 188.0...190.0 Del.quantity 1000 : (185.0...193.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 116...124 Testing: 1st rack travel in: 9.30 rpm : 1125...1135 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 60...68 Testing: Speed : 200 rpm Minimum rack trave: 6.60 Speed rpm : 275 Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 275...390 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 700 Pressure : 10.30...10.40 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.00...8.40 2nd pressure hPa : 360 Rack travel in m: 9.80...9.90 3rd pressure hPa : 160 Rack travel in m: 8.60...8.90 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS

rpm : 500

Del.quantity cm3/: 109.0...111.0 1000 s: (106.0...114.0)

1st version Speed rpm : 650 Del.quantity cm3/ : 171.0...177.0 1000 s: (168.0...180.0) Aneroid pressure h: -

BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 rpm : 1125...1135 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) LOW IDLE Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks:

Start-of-delivery mark 9.5, cam angle after start of delivery cyl. 1

Speed

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95)
Rack travel in mm : 17.50...18.50
Firing order : 1-5-3-6-2-4 Note remarks : RVI 9,8 i Test sheet Edition : 02.01.90 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Combination no. : 0 402 046 338 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A320RS522 : 0 412 026 057 BEGINNING OF DELIVERY DIFFERENCE EP type number Governor betw. rack trav. m: 7.40...7.60 Governor design. : RQV275...1000PA912 & maximum rack tra: 18.00 Difference., CS : 2.50...4.50 : 0 421 813 744 Governer no. Customer-spec. information BASIC SETTING Customer : RVI rpm: 1000 : MIDRO62045L 1st speed Engine Rack travel in mm : 12.00...12.10 1st version kW : 176.5 Rated speed : 2000 Del.quantity cm3/: 17.0...17.2 TEST BENCH REQUIREMENTS 100 s: (16.7...17.5) Test oil cm3 : 0.5inlet temp., C . : 38...42 Spread 100 s: (0.9) Overflow valve : 1 417 413 025 rpm : 275.0 2nd speed Rack travel in mm: 5.5...5.7 Inlet press., bar: 1.50 Del.quantity cm3/: 4.0...4.6 100 s: (3.7...4.9) Test nozzle holder cm3 : 0.8 : 1 688 901 019 Spread assembly 100 s: (1.2) Openina : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0,8 rpm : 275 : 0.70...0.90 1st speed travel mm rpm : 500 Test Lines : 1 680 750 067 2nd speed : 3.50...4.10 travel mm 3rd speed rpm : 750 Outside diameter x Wall thickness 5.30...5.70 travel mm 1000 : 6.00x1.50x1000 4th speed x Length mm rpm : 7.10...7.30 travel mm : 1400

x Length mm : 6.00X1.50X1000 + 4th speed rpm : 1000 + travel mm : 7.10...7.30 (A) Injection pump setting values | 5th speed rpm : 1400 Insp. values in parentheses | travel mm : 11.00...12.00 Set equal delivery quant. | GUIDE SLEEVE POSITION

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Control-lever position
Degree: -1
Speed rpm: 1130

Rack travel in mm: 15.20...17.80

FLALL LOAD DELTY. AT FULL LOAD STOP

1st version

rpm : 1000Speed Aneroid pressure h: 1000

: 170.0...172.0 Del.quantity

1000 : (167.0...175.0) : 5.00

Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 11.00

Speed rpm: 1075...1085 2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

Speed : 200 rom Minimum rack trave: 7.40 : 275 rpm

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 310...430 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rom : 500 hPa : 1000 Speed rpm Pressure

: 12.00...12.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.40

2nd pressure hPa : 240

Rack travel in m: 11.60...11.70

3rd pressure hPa : 140

Rack travel in m: 10.60...10.90

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 600 Speed

Del.quantity cm3/: 152.0...158.0 1000 s: (149.0...161.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 97.0...99.0 1000 s: (94.0...102.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1075...1085 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 130.0...160.0

1000 s: (130.0...160.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 40.0...46.0 1000 s: (37.0...49.0)

cm3 : 8.00 Spread

1000 s: (12.00)

:

Remarks:

Note remarks

: MB 11,7 a 9 : 15.08.89 Test sheet Edition : 14.4.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 773

Injection pump

Pump designation : PES6P110A820LS3131

EP type number : 0 412 016 715

Governor

Governor design. : RQ300/1100PA800 : 0 421 801 347 Governer no.

Customer-spec, information

Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

: (4.25...4.45)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 10.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 13.9...14.1

100 s: (13.6...14.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 600

Rack travel in mm : 12.50...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 139.0...141.0 Del.quantity 1000 : (136.5...143.5)

: 4.00 Spread cm3

: (8.00) 1000

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 13.0

Testing:

1st rack travel in: 10.00

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

rpm : 100 Speed Minimum rack trave: 8.80

Speed rpm : 300 Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00 rpm : 380...420 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 116.0...119.0 1000 s: (113.0...122.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.80...3.90 Prestroke mm : (3.75...3.95) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 6-2-4-1-5-3 Test sheet : MAN vort. Edition : 3.1.90 Replaces : 0-60-120-180-240-300 Test oil : TSO-4113 Phasing Combination no. : 0 402 046 776 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 Injection pump Pump designation : PES6P120A720LS3167 : 0 412 026 720 BASIC SETTING EP type number Governor Governor design. : RQ750PA661-2 1st speed rom : 700 Rack travel in mm : 14.40...14.50 Customer-spec. information Customer : MAN Del.guantity cm3/: 28.0...28.1 : D2866LE Engine 100 s: (27.7...28.4) 1st version kW : 230.0 : 1500 Spread cm3 : 0.5Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil Rack travel in mm : 6.9...7.7 Del.quantity cm3/ : 2.4...3.0 inlet temp.., C : 38...42 100 s: (2.1...3.3) Overflow valve cm3 : 0.8 : 1 417 413 025 Spread 100 s: (1.2) Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder assembly : 1 688 901 019 1st version Speed rpm : 700 : 280.0...281.0 Del.quantity Opening 1000 : (277.0...284.0) : 207...210 pressure, bar : 5.00 Spread cm3 1000 : (9.00) Orifice plate : 0,8 diameter mm RATED SPEED Test lines : 1 680 750 075 1st version Testing: Outside diameter 1st rack travel in: 13.40 x Wall thickness : 8.00x2.50x1000 Speed rpm : 750...755 x Length mm 2nd rack travel in: 4.00 : 788...791 (A) Injection pump setting values Speed rpm Insp. values in parentheses Set equal delivery quant.

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 220.0...240.0
1000 s: (210.0...250.0)

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Remarks:

: MAN-NR. 2-7654 : (HANDEINGABE)

APPLICATION

Generator set

Note remarks

: RVI 9,8 e Test sheet : 25.08.89 Edition : 5.2.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 784

Injection pump

Pump designation : PES6P120A320RS3139 EP type number : 0 412 026 718

Governor

Governor design. : RQV275...1000PA728-2

Governer no. : 0 421 813 599

Customer-spec. information Customer : RVI

Engine : MIDR 062045 E

: 236.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.90...1.10 travel mm rpm : 450 2nd speed

travel mm : 3.30...3.70

rpm : 800 3rd speed

: 5.60...6.00 travel mm

rpm : 1000 4th speed : 7.00...7.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

: 208.0...210.0 Del.quantity 1000 : (205.0...213.0)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever

position degrees: 59...67

Testina:

1st rack travel in: 10.60 rpm : 1065...1075 Speed

2nd rack travel in: 4.00 Speed rpm: 1180...1210 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 200 rpm Minimum rack trave: 7.60 : 275 rpm

Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

rpm : 230...320 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed nom hPa : 1000 Pressure

: 11.60...11.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 320

Rack travel in m: 10.90...11.00

3rd pressure hPa : 160

Rack travel in m: 9.50...9.70

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 600 Speed

Del.quantity cm3/: 200.0...206.0 1000 s: (197.0...209.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 95.0...99.0 1000 s: (92.0...102.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60 peed rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9, cam angle

after start of delivery cyl. 1.

Note remarks

Test sheet : RVI 6,2 b : 30.09.88 Edition : 5.6.87 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 785

Injection pump

Pump designation : PES6P110A320RS3190

EP type number : 0 412 016 720

Governor

Governor design. : RQV275...1175PA833-1

Governer no. : 0 421 813 607

Customer-spec. information : RVI Customer

: MIDR 060226 Engine

: 154.5 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm : (4.15...4.35)

Rack travel in mm : 18.00...21.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00 & maximum rack tra: 18.0...21.0 Difference, CS : 4.00...6.00

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 11.4...11.7

100 s: (11.1...11.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed

Rack travel in mm : 4.00...4.20 Del.quantity cm3/: 1.5...2.0 100 s: (1.2...2.2) Spread cm3: 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 0.90...1.10 travel mm

rpm : 450 2nd speed

: 3.40...3.80 travel mm

rpm : 800 3rd speed

: 5.10...5.50 rpm : 1175 travel mm

4th speed

: 7.20...7.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

Aneroid pressure h: 1000 : 114.0...117.0 Del.quantity 1000 : (111.5...119.5) : 4.00 cm3 Spread 1000 : (7.50) RATED SPEED 1st version Control Lever position degrees: 49...57 Testing: 1st rack travel in: 12.40 Speed rpm : 1245...1255 2nd rack travel in: 4.00 rpm : 1400...1430 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 11...19 Testing: Speed : 200 rpm Minimum rack trave: 6.60 rpm : 275 Rack travel in mm : 4.00...4.20 CONSTANT REGULATION : 250...320 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure Rack travel mm : 13.40...13.50 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.60...10.80 2nd pressure hPa : 360 Rack travel in m: 12.60...12.70 3rd pressure hPa : 160 Rack travel in m: 11.50...11.80 START CUT-OUT

1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 : 700 Speed rpm Del.quantity cm3/: 109.5...114.5 1000 s: (106.5...117.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 57.0...60.0 1000 s: (54.5...62.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1245...1255 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.00...4.20
Del.quantity cm3/ : 15.0...20.0
1000 s: (12.5...22.5)
Spread cm3 : 4.50

pread cm5 : 4.50 1000 s: (7.50)

Remarks:

:

Speed

Note remarks

Test sheet : RVI 6,2 c Edition : 30.09.88 : 30.3.87 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 786

Injection pump

Pump designation : PES6P110A320RS3191 EP type number : 0 412 016 721

Governor

Governor design. : RQV275...1250PA833-2

: 0 421 813 608 Governer no.

Customer-spec. information : RVI Customer

: MIDR 060226 Engine

1st version kW : 175.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.40...4.50 : (4.35...4.55) Prestroke mm

Rack travel in mm : 18.00...21.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 8.4...8.7

100 s: (8.1...8.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.9...2.4 100 s: (1.6...2.6)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 0.80...1.20

travel mm rpm : 450 2nd speed

: 3.00...3.40 travel mm

rpm : 800 3rd speed

: 4.60...5.00 travel mm

rpm : 1250 4th speed

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1360 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1000

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED 1st version Control Lever position degrees: 50...58 Testing: 1st rack travel in: 12.80 Speed rpm : 1315...1325 2nd rack travel in: 4.00 Speed rpm : 1455...1485 4th rack travel in: 1600 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed rpm Minimum rack trave: 7.10 Speed : 275 rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 280...320 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 : 13.80...13.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 13.10...13.20 2nd pressure hPa : 160 Rack travel in m: 13.50...13.60 3rd pressure hPa : 120 Rack travel in m: 13.20...13.40 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 750 Speed Del.guantity cm3/: 83.0...88.0 1000 s: (80.0...91.0)

Speed rpm : 500
Del.quantity cm3/ : 59.0...62.0
1000 s: (56.5...64.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1315...1325

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm: 275
Rack travel in mm: 4.80...5.00
Del.quantity cm3/: 19.0...24.0
1000 s: (16.5...26.5)
Spread cm3: 4.50
1000 s: (7.50)

Remarks:

020

Aneroid pressure h: -

Note remarks

: KHD 9,6 u Test sheet : 15.08.89 Edition : 18.10.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 799

Injection pump

Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712

Governor

Governor design.: RQV300...1075PA850-1

: 0 421 813 708 Governer no.

Customer-spec. information : KHD Customer

: BF6L413FR/513R Engine

1st version kW : 193.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1075 1st speed

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.6...2.1

100 s: (1.4...2.4)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed travel mm : 1.20...1.40

2nd speed rpm : 400

: 2.70...3.30 travel mm rpm : 600 3rd speed

: 4.20...4.80 travel mm

rpm : 1120 4th speed : 8.40...8.60 travel mm

rpm : 1245 5th speed

: 9.60...10.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1075 Speed

Aneroid pressure h: 900

Del.quantity : 143.0...150.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 51...59

Testing:

1st rack travel in: 12.40 Speed rpm : 1115...1125

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 16...24

Testing:

Speed : 100 rpm Minimum rack trave: 9.60 : 300 Speed rpm

Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

rpm : 300...490 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1075 Rack travel in m: 13.40...13.50

: 600 2nd speed rpm

Rack travel in m: 13.60...13.80

: 950 3rd speed rpm

Rack travel in m: 13.50...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

: 450 Speed rom hPa : 900 Pressure

: 13.40...13.50 Rack travel mm

Measurement

Speed 1/min: 450

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 420

Rack travel in m: 13.20...13.30

START CUT-OUT

1/min: 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 600 Speed

Del.quantity cm3/: 149.0...154.0

1000 s: (146.5...156.5)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 11,7 a13 : 15.08.89 Edition Replaces : 4.11.88 : ISO-4113 Test oil

Combination no. : 0 402 046 803

Injection pump

Pump designation : PES6P110A820LS3131-1

EP type number : 0 412 016 717

Governor

Governor design. : RQ300/1100PA722-1

: 0 421 801 461 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M447 Engine

1st version kW : 168.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 300.02nd speed Rack travel in mm: 7.2...7.4

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 137.0...139.0 Del.quantity

1000 : (134.5...141.5)

cm3 : 4.00 1000 : (8.00) Spread

RATED SPEED

1st version

Setting point:

: 600 Speed riom . Rack travel in mm: 13.5

Testing:

1st rack travel in: 9.90

rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1185...1215 4th rack travel in: 1250

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

rpm : 200 Speed Minimum rack trave: 8.80

Speed rpm : 300 Rack travel in mm : 7.20...7.40

Rack travel in mm: 2.00 rpm : 370...410 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 113.0...116.0 1000 s: (110.0...119.0)

cm3 : 5.00 1000 s: (9.00) Spread

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

Note remarks

: KHD 9,6 u 4 Test sheet : 02.10.89 Edition : 16.6.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 806

Injection pump

Pump designation : PES6P110A720RS3104

EP type number : 0 412 016 712

Governor

Governor design. : RQV300...1150PA850-4

Governer no. : 0 421 813 745

Customer-spec. information Customer : KHD

Engine : BF6L513RC

1st version kW : 210.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.9)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 : 1.00...1.40 travel mm

rpm : 450 2nd speed

: 2.60...3.20 travel mm

3rd speed rpm : 650

: 3.30...3.90 travel mm rpm : 1195

4th speed : 8.30...8.50 travel mm

: 1330 5th speed rom

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 900

Del.quantity : 105.0...170.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 52...60

Testina:

1st rack travel in: 13.00

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Testina:

: 100 Speed rpm Minimum rack trave: 9.00 : 300 rpm

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

rpm : 300...550 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 14.00...14.10 2nd speed rpm : 750

Rack travel in m: 14.20...14.40

3rd speed rpm : 850

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version Setting

Speed man

: 500 hPa : 900 Pressure

: 14.20...14.30 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.10...12.30 2nd pressure hPa : 510

Rack travel in m: 13.70...13.80

3rd pressure hPa : 375

Rack travel in m: 12.60...12.90

START CUT-OUT

1/min : 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 ; 750

Speed rpm Del.quantity cm3/: 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm: 450 Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 11,7 a15 Edition : 02.01.90 Replaces : 8.5.89 Test oil : ISO-4113

Combination no. : 0 402 046 808

Injection pump

Pump designation : PES6P110A820LS3131-1

EP type number : 0 412 016 717

Governor

Governor design. : RQV300..1100PA916-1

Governer no. : 0 421 813 749

Customer spec. information

Customer : MERCEDES-BENZ

Engine : 0M447

1st version kW : 177.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40 : (4.25...4.45)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.2)

Spread cm3: 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4 100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.10...1.40

2nd speed rpm : 450 travel mm : 3.40...3.80

3rd speed rpm : 1150 travel mm : 7.90...8.30

4th speed rpm: 1225

travel mm : 9.10...9.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

cm3 : 4.00 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 50...58 Testing: 1st rack travel in: 10.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1185...1215 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 20...28 Testing: : 200 Speed rpm Minimum rack trave: 8.80 : 300 Speed rpm Rack travel in mm : 7.20...7.40 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 116.0...119.0 1000 s: (113.0...122.0) Spread cm3 : 5.001000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

Test sheet : MAN 11,9 m1 Edition : 15.08.89

Replaces

: ISO-4113 Test oil

: 0 402 046 810 Combination no.

Injection pump

Pump designation : PES6P120A720LS3229

EP type number : 0 412 026 733

Governor

Governor design. : RQ750PA661-4 : 0 421 801 361 Governer no.

Customer-spec. information Customer : MAN

: D2866TE Engine

1st version kW : 190.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 23.1...23.3

100 s: (22.8...23.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.5...4.9 Del.quantity cm3/: 2.4...3.0

100 s: (2.1...3.3)

cm3 : 0.8 Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 231.0...233.0 Del.quantity : (228.0...236.0) 1000

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.20

rpm : 750...755 Speed

2nd rack travel in: 4.00 rpm : 782...795 Speed

3rd rack travel in: 4.00 4th rack travel in: 950

rpm : 0.00...1.00Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...175.0 1000 s: (161.0...179.0)

Remarks:

APPLICATION

Generator set

Note remarks

: RVI 6,2 f Test sheet : 09.11.89 : 7.7.89 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 811

Injection pump

Pump designation : PES6P110A320RS3233 EP type number : 0 412 016 728

Governor

Governor design. : RQV275...1175PA833-4

: 0 421 813 762 Governer no.

Customer-spec. information : RVI Customer

: MIDR 060226D Engine

1st version kW : 166.0 : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

: (4.15...4.35)

Rack travel in mm : 18.00...21.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + -., .: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00 & maximum rack tra: 18.0...21.0 Difference ., CS : 4.00...6.00

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 11.7...12.0

100 s: (11.4...12.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 2.8...3.3 100 s: (2.5...3.5)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.40...0.60 travel mm

rpm : 450 2nd speed

travel mm : 2.90...3.50

rpm : 800 3rd speed

: 4.60...5.00 travel mm

rpm : 1175 4th speed : 6.90...7.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1175 Speed

Aneroid pressure h: 1000 Del.quantity : 117.0...120.0 1st version Aneroid pressure h: 1000 , : 700 1000 : (114.5...122.5) Speed rpm Del.guantity cm3/: 111.5...116.5 : 4.00 cm3 Spread 1000 : (7.50) 1000 s: (108.5...119.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 49.5...52.5 1000 s: (47.0...55.0) RATED SPEED 1st version Control lever position degrees: 52...60 BREAKAWAY Testina: 1st rack travel in: 12.50 1st version rpm : 1255...1265 1mm rack travel less than Speed 2nd rack travel in: 4.00 rpm : 1410...1440 full load rack tr: 12.50 Speed rpm : 1255...1265 4th rack travel in: 1550 Speed rom : 0.00...1.00Speed STARTING FUEL DELIVERY LOW IDLE 1 Control Lever position degrees: 14...22 : 100 Speed rpm Del.quantity cm3/: 85.0...105.0 1000 s: (81.0...109.0) Testing: : 200 Speed rpm Minimum rack trave: 7.20 LOW IDLE rpm : 275 Speed Rack travel in mm : 4.80...5.00 Speed rpm : 275 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 28.0...33.0 CONSTANT REGULATION : 250...320 1000 s: (25.5...35.5) Speed rom Spread cm3 : 4.501000 s: (7.50) Aneroid/Altitude Compensator Test Remarks: 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 13.50...13.60 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 400 Rack travel in m: 12.90...13.00 3rd pressure hPa : 160 Rack travel in m: 10.90...11.30 START CUT-OUT 1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: RVI 6,2 g : 09.11.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 812

Injection pump

Pump designation : PES6P110A320RS3236

EP type number : 0 412 016 730

Governor

Governor design. : RQV275...1175PA833-3

: 0 421 813 656 Governer no.

Customer-spec. information Customer : RVI

: MIDR 060226D Engine

: 166.0 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm : (4.15...4.35)

Rack travel in mm : 18.00...21.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.00

& maximum rack tra: 18.0...21.0 Difference ., CS : 4.50...6.00

BASIC SETTING

rom: 1175 1st speed

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 11.7...12.0

100 s: (11.4...12.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed

Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 2.8...3.3 100 s: (2.5...3.5)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 0.70...1.10 travel mm rpm : 450 2nd speed

: 3.00...3.40 travel mm

: 700 3rd speed rpm

: 4.20...4.60 travel mm

rpm : 1175 4th speed

: 6.80...7.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

Aneroid pressure h: 1000 Del.quantity : 117.0...120.0 1000 : (114.5...122.5) cm3 : 4.00 Spread 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 12.40 rpm : 1255...1265 Speed 2nd rack travel in: 4.00 rpm : 1415...1435 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 14...22 Testing: Speed : 200 rpm Minimum rack trave: 7.10 Speed : 275 rpm Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 250...320 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 13.40...13.50 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 400 Rack travel in m: 12.80...12.90 3rd pressure hPa : 160 Rack travel in m: 10.80...11.20 START CUT-OUT 1/min: 195 (215) Speed

1st version Aneroid pressure h: 1000 rpm : 700 Speed Del.quantity cm3/: 111.5...116.5 1000 s: (108.5...119.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 49.5...52.5 1000 s: (47.0...55.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1255...1265 Speed STARTING FUEL DELIVERY Speed rpm: 100 Del.quantity cm3/: 85.0...105.0 1000 s: (81.0...109.0)

Remarks:

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet Edition

: MAN 11,9 m2 : 02.01.90

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 046 814

Injection pump

Pump designation : PES6P120A720LS3229

Governor

EP type number : 0 412 026 733

Governor design. : RQ750PA945 Governer no.

: 0 421 801 512

Customer-spec. information Customer

: MAN

Engine

: D2866LE

1st version kW Rated speed

: 230.0 : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12.00 Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 28.1...28.3

100 s: (27.8...28.6)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 4.1...4.7 Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

cm3 : 0.8 Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 281.0...283.0 1000 : (278.0...286.0)

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.50

rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rpm: 787...800

4th rack travel in: 950 Speed

rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 12.50...12.60

Remarks:

: MAN-NR. 2-7970

APPLICATION

Generator set

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Note remarks : 1-8-4-2-7-3-6-5 Firing order : RVI 14,9 f3 Test sheet : 09.11.89 Edition : 24.6.88 Replaces : ISO-4113 Test oil : 0-45-90-135-180-225-Phasing Combination no. : 0 402 048 048 270-315 Injection pump Pump designation : PES8P120A320RS507 BASIC SETTING : 0 412 028 023 EP type number rpm: 1050 1st speed Governor Governor design. : RQV275...1050PA665-3 : 0 421 813 677 Rack travel in mm : 11.70...11.80 Governer no. Customer-spec. information Del.guantity cm3/: 19.6...19.8 : RVI Customer 100 s: (19.3...20.1) : MIVRO83530 G Engine cm3 : 0.5Spread 1st version kW : 299.0 100 s: (0.9) : 2100 Rated speed rpm : 300.0 TEST BENCH REQUIREMENTS 2nd speed Rack travel in mm : 6.2...6.4 Del.quantity cm3/ : 2.0...2.6 Test oil 100 s: (1.7...2.9) inlet temp. _, C . : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder GUIDE SLEEVE TRAVEL : 1 688 901 019 rpm : 275 assembly 1st speed : 0.60...1.00 travel mm 2nd speed rpm : 450 **Opening** : 3.60...4.00 rpm : 700 pressure, bar : 207...210 travel mm 3rd speed : 5.40...5.80 rpm : 1050 Orifice plate travel mm : 0,8 4th speed diameter mm : 7.90...8.10 travel mm rpm : 1400 5th speed : 11.00...12.00 Test Lines : 1 680 750 075 travel mm GUIDE SLEEVE POSITION Outside diameter x Wall thickness Control-lever position x Length mm : 6.00x1.50x1000 Degree: -1 rpm : 1085 Speed Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values ___ 1st version

Speed

rpm : 1050

Aneroid pressure h: 700

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 196.0...198.0 1000 : (193.0...201.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 48...56 Testing: 1st rack travel in: 10.70 Speed rpm : 1105...1115 2nd rack travel in: 4.00 rpm : 1205...1235 Speed 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 14...22 Testing: : 200 Speed rom Minimum rack trave: 8.00 : 300 mom Rack travel in mm: 6.20...6.40 CONSTANT REGULATION rpm : 290...410 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 700 Pressure : 11.70...11.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.60...10.00 2nd pressure hPa : 170 Rack travel in m: 11.10...11.30 3rd pressure hPa : 130 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min : 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.20...6.40
Del.quantity cm3/: 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12, cam angle after start of delivery cyl. 1.

E10

1st version

FUEL DELIVERY CHARACTERISTICS

Note remarks

: RVI 14,9 i Test sheet : 09.11.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 048 049

Injection pump

Pump designation : PES8P120A320RS523

: 0 412 028 024 EP type number

Governor

Governor design. : RQV275...1050PA665-3

: 0 421 813 677 Governer no.

Customer-spec. information Customer : RVI

: MIVRO83530 H Engine

: 299.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 8- 4- 2- 7- 3-Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 2.3...2.9 100 s: (2.0...3.2)

8.0 : Emp Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 0.60...1.00 travel mm

rpm : 450 2nd speed

: 3.60...4.00 travel mm

: 700 3rd speed rpm

travel mm

: 5.40...5.80 : 1050 4th speed rpm

travel mm

: 7.90...8.10 : 1400 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1085 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 750

Del.quantity : 196.0...198.0 1000 : (193.0...201.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 10.70 rpm : 1105...1115 Speed 2nd rack travel in: 4.00 rpm : 1205...1235 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 17...25 Testina: Speed LDW Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 6.20...6.40 CONSTANT REGULATION rpm : 290...410 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Rack travel mm : 11.70...11.80 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.60...10.00 2nd pressure hPa : 170 Rack travel in m: 11.10...11.30 3rd pressure hPa : 130 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 750 rpm : 650 Speed Del.quantity cm3/: 183.0...189.0 1000 s: (180.0...192.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1105...1115 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 160.0...180.0 1000 s: (156.0...184.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Start-of-delivery mark 11.5, cam angle after start of delivery cyl. 1

1st version

Test sheet : DEE 7,6 y 1
Edition : 28.09.89
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 076 722

Injection pump

Note remarks

Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728

Governor

Governor design. : RSV400...1100P2A534

Governer no. : 0 421 833 275

Customer—spec. information Customer : JOHN DEERE

Engine : 6466 HF-050

1st version kW : 194.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.6...15.8

100 s: (15.4...16.1)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.6 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 eed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 156.5...158.5 1000 : (154.0...161.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1200...1210 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 16...24 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.4 Testina: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 4.80...5.00 Rack travel in mm : 2.00 rom : 540...600 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.00...12.10 rpm : 750 2nd speed Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -: 10.30...10.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 605 Rack travel in m: 11.00...11.10
2nd pressure hPa : 780
Rack travel in m: 12.10...12.50
3rd pressure hPa : 1200 Rack travel in m: 12.80...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

Speed rpm : 750 Del.quantity cm3/: 174.5...179.5

Aneroid pressure h: -

rpm

1000 s: (172.0...182.0)

Del.quantity cm3/: 117.5...121.5 1000 s: (114.5...124.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1145...1155 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0) cm3 : 6.00 Spread 1000 s: (8.00) Remarks: : JOHN DEERE # RE32035 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. Starting/full-load transition speed from holding magnet = 450 1/min. Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Speed

Note remarks

Test sheet : DEE 7,6 y : 28.09.89 Edition : 7.4.89 Replaces : ISO-4113 Test oil

: 0 402 076 723 Combination no.

Injection pump

Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728

Governor

: RSV400...1100P2A534-Governor design.

: 0 421 833 276 Governer no.

Customer-spec. information : JOHN DEERE Customer

Engine : 6466 AF-050

1st version kW : 180.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm : (3.50...3.70)

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.80...11.90

Del.guantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 150.0...152.0 Del.quantity 1000 : (147.5...154.5)

cm3 : 4.00Spread

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1210 4th rack travel in: 1350

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.4

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00

: 400 Speed rpm

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00

rpm : 540...600 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.80...11.90

2nd speed rpm : 700

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1200 Speed rom

Pressure

Rack travel mm : 12.60...12.80

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 10.40...10.60

2nd pressure hPa : 720

Rack travel in m: 11.00...11.10

3rd pressure hPa : 895

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 700 Speed

Del.quantity cm3/: 173.5...178.5 1000 s: (171.0...181.0)

Ameroid pressure h: -

: 800 Speed rpm

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

: DEE 7,7 b Test sheet : 28.09.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 076 727

Injection pump

Pump designation : PES6P120A720RS3203

: 0 412 026 728 EP type number

Governor

Governor design. : RSV400...1100P2A534-

: 0 421 833 290 Governer no.

Customer—spec. information

: JOHN DEERE Customer

: 6076AF Engine

1st version kW : 160.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70) Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.4...13.6

100 s: (13.1...13.8)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

Del.quantity : 134.0...138.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.10

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1200...1210 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 400 Speed Rack travel in mm: 4.4

Testing:

: 100 Speed rpm Minimum rack trave: 19.00

rpm : 400 Speed

Rack travel in mm : 4.80...5.00

Rack travel in mm: 2.00 : 540...600 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1100 Rack travel in m: 11.10...11.20

2nd speed rpm : 700

Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rom

hPa : -Pressure : 10.50...10.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 470

Rack travel in m: 11.20...11.30

2nd pressure hPa : 605

Rack travel in m: 11.80...12.20

3rd pressure hPa : 900

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 700 Speed

Del.quantity cm3/: 165.5...170.5 1000 s: (163.0...173.0)

Aneroid pressure h: -

: 800 Speed rpm

Del.quantity cm3/: 122.0...126.0 1000 s: (119.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 90.0...110.0

1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,7 c Edition : 28.09.89 : 7.4.89 Replaces : ISO-4113 Test oil

: 0 402 076 728 Combination no.

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728 EP type number

Governor

: RSV425...1050P2A489-Governor design.

: 0 421 833 291 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6076 HRW01 Engine

: 175.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 16.0...16.2

100 s: (15.7...16.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 3.1...3.6

100 s: (2.9...3.9)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed Aneroid pressure h: 1200

Del.quantity : 160.0...162.0 1000 : (157.5...164.5)

: 4.00 Spread cm3 1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testina:

1st rack travel in: 11.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm: 1160...1170 4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 20...28 Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm : 5.1 : 425

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 425

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00

Speed rom : 610...670

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.20...12.30

2nd speed rpm : 600

Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 13.40...13.60

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 12.10...12.30

2nd pressure hPa : 725
Rack travel in m: 12.50...12.60
3rd pressure hPa : 815

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600 Del.quantity cm3/: 191.0...196.0 1000 s: (188.5...198.5)

Aneroid pressure h: -

Speed : 800 rpm

Del.quantity cm3/: 157.0...161.0 1000 s: (154.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 425
Rack travel in mm: 5.50...5.70

Del.quantity cm3/: 31.5...36.5 1000 s: (29.0...39.0)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

: DEE 10,1 g : 28.09.89 Test sheet Edition : 7.4.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 730

Injection pump

Pump designation : PES6P110A720RS3217

: 0 412 016 724 EP type number

Governor

Governor design. : RSV550...1050P2A534-

: 0 421 833 304 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6619AT07 Engine

: 201.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.6...18.8

100 s: (18.3...19.0)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 550.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 3.1...3.6 100 s: (2.9...3.9)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 186.0...188.0 Del.quantity

1000 : (183.5...190.5)

: 4.00 Spread cm3 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.70

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1165...1175 Speed

4th rack travel in: 1275

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 17...25

Setting point w/out bumper spring

: 550 Speed rpm : 550 Rack travel in mm : 4.8

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 : 550 Speed CDM

Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00

rpm : 680...740 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 11.70...11.80

2nd speed rpm : 700

Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm hPa : 900 Pressure

: 12.50...12.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 425

Rack travel in m: 11.20...11.30

3rd pressure hPa : 675

Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/: 201.5...206.5 1000 s: (199.0...209.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 158.0...162.0 1000 s: (155.0...165.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...185.0 1000 s: (160.0...190.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 550 Speed rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 31.5...36.5

1000 s: (29.0...39.0)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36078

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

: DEE 10,1 g1 : 28.09.89 : 7.4.89 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 731

Injection pump

Pump designation : PES6P110A720RS3217

: 0 412 016 724 EP type number

Governor

Governor design. : RSV400...1050P2A534-

: 0 421 833 305 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6101 H Engine

1st version kW : 224.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : D 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.6)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 400.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.6...3.1 100 s: (2.3...3.3)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 1200 Del.quantity : 212.0...214.0

1000 : (209.5...216.5)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.90

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1165...1175

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 14...22

Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.1

Testing:

Speed : 100 rom Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.90...13.00 nd speed rpm : 700

2nd speed

Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 13.70...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.10 2nd pressure hPa : 325 Rack travel in m: 11.60...11.70

3rd pressure hPa : 640

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 700

Del.quantity cm3/: 228.0...233.0 1000 s: (225.5...235.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...185.0 1000 s: (160.0...190.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 26.0...31.0 1000 s: (23.5...33.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,7 g : 28.09.89 : 7.4.89 Edition Replaces : ISO-4113 Test oil

: 0 402 076 733 Combination no.

Injection pump

Pump designation : PES6P110A720RS3224 EP type number : 0 412 016 726

Governor

: RSV475...1050P2A534-Governor design.

: 0 421 833 313 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6101 AT 001 Engine

: 170.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.35...3.45 Prestroke mm : (3.30...3.50)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1050

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 15.8...16.0

100 s: (15.6...16.2)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 475.0 2nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.7)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 700

Del.quantity : 158.0...160.0 1000 : (156.0...162.0)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testina:

1st rack travel in: 12.20

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1135...1145 Speed

3rd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250 Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 475 Rack travel in mm: 5.6

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 rpm : 475 Speed

Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00

Speed : 620...680 rom

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed man hPa : 700 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.10...11.30

2nd pressure hPa : 335 Rack travel in m: 12.80...12.90 3rd pressure hPa : 185 Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 120.0...124.0

1000 s: (117.0...127.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 1090...1100

Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 475 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 10.5...14.5 1000 s: (8.0...17.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: JOHN DEERD # RE39856

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

: MTU 47,5 d : 8.1.90 Test sheet Edition : 3.84 Replaces : ISO-4113 Test oil

Combination no. : 0 402 430 006

Injection pump

Pump designation : PE12ZW160/12ORS1015/

EP type number : 0 412 460 001

Governor

Governor design. : RQUV300...900ZWA51R

: 0 422 409 030 Governer no.

Customer-spec. information Customer : MTU

: MT 12 V 396 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 027

Outside diameter x Wall thickness

: 8.00X2.00X1500 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 12.00

: 12-9-4-5-8-11-2-3-10 Firing order

: 0-15-60-75-120-135-Phasing 180-240-255-300-315

Tolerance + - ... : 0.50(0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 18.00

Del.quantity cm3/: 51.3...52.3

100 s: (51.0...52.6)

cm3 : 1.6 Spread

100 s: (2.4)

rpm : 600 2nd speed Rack travel in mm : 9.00

Del.quantity cm3/: 14.0...16.0 100 s: (13.5...16.5)

cm3 : 1.2 Spread

100 s: (1.8) rpm : 300 3rd speed Rack travel in mm: 9.00

Del.quantity cm3/ : 7.2...9.2

100 s: (6.7...9.7)

cm3 : 1.1 Spread

100 s: (1.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 900 Speed

Rack travel in mm : 18.00...18.10

RATED SPEED

1st version Control Lever

position degrees: 75...83

Testina:

1st rack travel in: 17.00 Speed rpm : 905...925 2nd rack travel in: 4.00 rpm : 1000...1050 Speed

4th rack travel in: 1100

: 0.00...2.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rom Rack travel in mm: 8.00 Control Lever

position degrees: 18...24

LOW IDLE 1

Testing:

: 200 Speed rpm Minimum rack trave: 10.80

Speed rpm : 400 Rack travel in mm : 3.90...5.00

Rack travel in mm : -

rpm : 485...590 Speed

LOW IDLE 5 Control lever

position degrees: 24...30

Setting point w/out bumper spring

Speed : 375 rpm Rack travel in mm: 8.00

Testing:

: 200 Speed rpm

Rack travel in mm : 14.3...17.2 Speed rpm : 300

Rack travel in mm: 10.3...11.8

rpm : 500 Speed

Rack travel in mm: 2.5...3.7

rpm : 720 Speed Rack travel in mm : -

Remarks:

See VDT-W-400/002

Set idle stop at 300 min -1 to a control-rod travel of 8.0 mm

Note remarks

: BAO 31,8 c1 Test sheet : 02.01.90 Edition : 6.85 Replaces : ISO-4113 Test oil

: 0 402 630 800 Combination no.

Injection pump

Pump designation : PE12P120A120RS7106 : 0 412 620 800 EP type number

Governor

Governor design. : RQV400...750PA731 : 0 421 813 464

Governer no.

Customer-spec. information Customer : BAUDOUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 074 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

345

.: 0.50 (0.75) Tolerance + -..

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 13.80...13.90

Del.quantity cm3/: 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm : 3.8...4.2 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 419.0...421.0 Del.quantity 1000 : (416.0...424.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.80 rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm : 776...789 4th rack travel in: 900

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 4...12

Testina:

: 100 Speed rpm Minimum rack trave: 6.10 : 400 Speed rpm

Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed 1/min: 340 (360)

Remarks:

:

Note remarks

Test sheet : BAO 14,9 a : 15.12.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 630 802

Injection pump

Pump designation : PE12P12OA12ORS7192

EP type number : 0 412 620 818

Governor

Governor design. : RQV325...1500PA930

: 0 421 813 804 Governer no.

Customer-spec. information : BAUDOUIN Customer

Engine : 12 F 120 SR

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 5- 3- 8-11- 4- 2- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

.: 0.50 (0.75) Tolerance + -..

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.4...4.6

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.60...1.00 travel mm

rpm : 700 2nd speed travel mm

: 2.90...3.30 rpm : 1500 3rd speed

: 8.10...8.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1700

Speed Rack travel in mm : 4.50...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Aneroid pressure h: 900

: 169.0...171.0 Del.quantity

1000 : (166.0...174.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 10.50 Speed rpm : 1540...1550 2nd rack travel in: 4.00 rpm : 1630...1660 Speed 4th rack travel in: 1750 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 14...22 Testing: rpm : 100 Speed Minimum rack trave: 6.00 rpm : 325 Speed Rack travel in mm : 4.40...4.60 CONSTANT REGULATION : 320...460 Speed rpm Aneroid/Altitude Compensator Test รีร์ซ version Setting Speed : 500 rom hPa : 900 Pressure : 11.50...11.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 400 Rack travel in m: 11.00...11.10 START CUT-OUT 1/min: 270 (290) Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1540...1550 Speed Remarks:

Note remarks

Test sheet : BAO 31,8 c2 Edition : 05.01.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 630 803

Injection pump

Pump designation : PE12P120A120RS7106

EP type number : 0 412 620 800

Governor

Governor design. : RQV400...750PA935

: 0 421 813 819 Governer no.

Customer-spec. information Customer : BAUDOUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 074

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

.: 0.50 (0.75) Tolerance + -.,

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed Rack travel in mm: 4.4...4.8

Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 419.0...421.0 Del.quantity

1000 : (416.0...424.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.70

rpm : 750...755 Speed 2nd rack travel in: 4.00

Speed rpm : 781...794 4th rack travel in: 900

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 4...12

Testing:

: 100 Speed rom

Minimum rack trave: 6.10 Speed rpm : 400 Rack travel in mm : 4.50...4.70

START CUT-OUT

1/min: 340 (360) Speed

Remarks:

Note remarks

: BAO 31,8 e Test sheet : 12.01.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 630 804 Combination no.

Injection pump

Pump designation : PE12P12OA12ORS7193

EP type number : 0 412 620 820

Governor

Governor design. : RQV275...1000PA938

Governer no. : 0 421 813 822

Customer-spec. information Customer : BAUDOUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 074

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 37.9...38.1

100 s: (37.6...38.4)

cm3 : 0.5 Bosera

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 5.3...5.7
Del.quantity cm3/ : 2.7...3.3

100 s: (2.4...3.6) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed : 0.60...1.00 travel mm

2nd speed rpm : 450

: 3.00...3.40 rpm : 700 travel mm

3rd speed

: 5.00...5.40 rpm : 1000 travel mm 4th speed

: 7.60...7.80 travel mm

rpm : 1300 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 900

Del.quantity : 379.0...381.0 1000 : (376.0...384.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 116...124 Testing: 1st rack travel in: 12.50 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1125...1155 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 63...71 Testina: Speed rpm : 100 Minimum rack trave: 7.00 Speed rom Rack travel in mm : 5.40...5.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 13.50...13.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 12.00...12.10 2nd pressure hPa : 400 Rack travel in m: 13.10...13.20 Rack travel in m: 12.40...12.60 START CUT-OUT 1/min: 195 (215) Speed BREAKAWAY 1st version

LOW IDLE

rpm : 325 Speed Rack travel in mm: 5.30...5.70

Del.quantity cm3/: 27.0...33.0

1000 s: (24.0...36.0)

Spread cm3: 8.00

1000 s: (12.00)

Remarks:

F08

Speed

1mm rack travel less than

full load rack tr: 12.50

rpm : 1040...1050

Note remarks

: STE 12,0 d1 : 07.02.89 Test sheet Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 402 638 802

Injection pump

Pump designation : PE8P120A120LS7127 EP type number : 0 412 628 817

Governor

Governor design. : RQV250..1100PA785-1

: 0 421 813 572 Governer no.

Customer-spec. information Customer : STEYR

: WD 815.66 Engine

: 270.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00 : 1-5-4-8-6-3-7-2 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1100

Rack travel in mm : 11.50...11.60

Del.guantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.20 travel mm rpm : 340 2nd speed

: 1.70...2.10 travel mm

rpm : 410 3rd speed

: 2.30...2.70 rpm : 1150 travel mm

4th speed

: 8.40...8.60 travel mm

rpm : 1240 5th speed

: 9.60...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

Aneroid pressure h: 900 : 174.0...176.0 Del.quantity 1000 : (171.0...179.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 44...52 Testina: 1st rack travel in: 10.50 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1350 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Testina: Speed : 100 man Minimum rack trave: 8.00 rpm Rack travel in mm : 6.50...6.70 CONSTANT REGULATION rpm : 250...420 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.50...11.60 nd speed rpm : 700 Rack travel in m: 11.70...11.90 2nd speed rpm : 800 3rd speed Rack travel in m: 11.60...11.80 rpm : 400 4th speed Rack travel in m: 12.00...12.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure

: 12.00...12.20 Rack travel mm Measurement $1/\min : 500$ Speed

1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 700 Rack travel in m: 11.20...11.30

3rd pressure hPa : 480 Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/: 182.0...190.0

1000 s: (180.0...192.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 112.0...116.0 1000 s: (110.0...118.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 230.0...260.0 1000 s: (226.0...264.0) Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed Rack travel in mm: 6.50...6.70 Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : PER 16,3 b : 02.10.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 638 803

Injection pump

Pump designation : PE8P120A120RS7141 EP type number : 0 412 628 823

Governor

Governor design. : RQ750PA871 Governer no. : 0 421 801 404

Customer-spec. information Customer : PERKINS

: CV8-320 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm

: (4.45...4.65)

Rack travel in ...m : 9.00...12.00

: 1- 3- 6- 5- 4- 8-7- 2 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.40...14.50

Del.guantity cm3/: 33.3...33.5

100 s: (33.0...33.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/ : 3.6...4.2 100 s: (3.3...4.5)

cm3 : 0.8Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 333.0...335.0 Del.quantity 1000 : (330.0...338.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 77...85

Testing:

1st rack travel in: 13.40 Speed rpm : 750...755

2nd rack travel in: 4.00 rpm : 775...785 Speed

4th rack travel in: 900

rpm : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40 Speed rpm : 750...755

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : MB 21,9 x 1 : 06.10.89 Edition : 12.12.86 Replaces Test oil : ISO-4113

Combination no. : 0 402 640 805

Injection pump

Pump designation : PE12P120A320LS7807

: 0 412 620 806 EP type number

Governor

Governor design. : RQV350...1050PA842-1

: 0 421 813 588 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

: 478.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 21.7...21.9

100 s: (21.4...22.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3501st speed

: 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.70...5.10 travel mm

3rd speed rpm : 1100

: 7.60...8.20 travel mm

rpm : 1175 4th speed

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 600 Rack travel in m: 13.80...14.00 1st version rpm : 650 Speed Aneroid pressure h: 800 3rd pressure hPa : 950 Del.quantity : 217.0...217.0 1000 : (214.0...222.0) Rack travel in m: 14.90...15.00 4th pressure hPa : 1150 Rack travel in m: 15.60...15.80 : 5.00 cm3 1000 : (9.00) 5th pressure hPa : -Rack travel in m: 10.50...10.70 RATED SPEED START CUT-OUT 1st version Control lever 1/min: 270 (290) Speed position degrees: 62...70 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 14.00 rpm : 1090...1100 Speed 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1300 rpm : 1175...1205 : 1050 Speed rpm Del.quantity cm3/: 226.0...229.0 1000 s: (223.0...232.0) 4th rack travel in: 1300 rpm : 0.00...1.00Speed cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: 1300 Control Lever position degrees: 11...19 Speed : 850 rpm Del.quantity cm3/: 244.0...248.0 1000 s: (241.0...251.0) Testing: cm3 : 8.00 Speed : 100 Spread rpm Minimum rack trave: 7.20 1000 s: (12.0) Speed rpm : 350 Rack travel in mm : 5.60...5.80 Aneroid pressure h: 1300 : 1050 Speed rpm Del.quantity cm3/: 164.0...167.0 * 1000 s: (161.0...170.0) CONSTANT REGULATION cm3 : 8.00 rpm : 400...600 Spread Speed 1000 s: (12.0) Aneroid pressure h: -TORQUE CONTROL Speed rpm : 500 Del.quantity cm3/ : 133.0...135.0 1000 s: (130.0...138.0) Dimension a mm Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 15.00...15.20 Spread cm3 : 8.00 1000 s: (12.0) 2nd speed rpm : 975 Rack travel in m: 15.30...15.50 3rd speed rpm : 900 Rack travel in m: 15.70...15.90 **BREAKAWAY** Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 14.00 rpm : 1090...1100 1st version Speed Setting : 600 STARTING FUEL DELIVERY Speed rpm hPa : 800 Pressure : 14.70...14.90 Rack travel mm rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.50 LOW IDLE

Remarks:

* = Set at reduced-delivery stop.

Note remarks

: MAN 21,0 a3 Test sheet Edition : 07.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 640 808

Injection pump

Pump designation : PE12P120A520LS7812

EP type number : 0 412 620 807

Governor

Governor design. : RQV250...1150PA860

: 0 421 813 626 Governer no.

Customer-spec. information Customer : MAN

Engine : D2842LXE

: 662.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 Prestroke mm

: (4.85...5.05)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 345 Phasing

Tolerance + -., .: 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 24.5...24.7

100 s: (24.2...25.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 500.0 2nd speed

Rack travel in mm: 8.7...8.9 Del.quantity cm3/: 14.1...14.7

100 s: (13.8...15.0)

Spread cm3: 0.8 100 s: (1.2) 3rd speed rpm: 250 Rack travel in mm: 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 2.00...2.50 travel mm

rpm : 900 2nd speed

: 6.70...6.90 travel mm

rpm : 1150 3rd speed

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Aneroid pressure h: 1300 : 245.0...247.0 Del.quantity 1000 : (242.0...250.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: ? Testing: 1st rack travel in: 11.20 rpm : 1190...1200 Speed 4th rack travel in: 1450 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: ? Testing: : 100 Speed rom Minimum rack trave: 8.90 Speed rpm : 250 Rack travel in mm : 7.30...7.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1300 Pressure Rack travel mm : 12.20...12.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 270 Rack travel in m: 9.20...9.30 3rd pressure hPa : 790 Rack travel in m: 11.30...11.70 START CUT-OUT

1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

rpm : 500

Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1190...1200 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 100.0...120.0 * 1000 s: (-) HIGH IDLE 1st version Speed rpm : 500 Rack travel in mm : 7.20...7.40 Del.quantity cm3/ : 0 ** 1000 s: (-) 2nd version rpm : 500 Speed Rack travel in mm : 8.00...8.20 Del.quantity cm3/: 10.0...130.0 1000 s: (-) LOW IDLE Speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 52.0...60.0 * 1000 s: (-) Remarks: * applies to cylinders 4, 5, 6, 8, 10 ** applies for cylinders 1, 2, 3, 7, 9 and 11 **APPLICATION** Ship

Speed

Speed

1st version

Aneroid pressure h: -

Note remarks

Test sheet : MAN 21,0 a : 15.08.89 : 10.2.89 Edition Replaces Test oil : ISO-4113

: 0 402 640 811 Combination no.

Injection pump

Pump designation : PE12P120A520LS7812 EP type number : 0 412 620 807

Governor

Governor design. : RQV250...1150PA860-1

Governer no. : 0 421 813 692

Customer-spec. information Customer : MAN

Engine : D2842LYE

1st version kW : 735.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 Prestroke mm : (4.85...5.05)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-

4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing 180-225-240-285-300-

: 345 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 5.2...6.0 * 100 s: (-)
3rd speed rpm : 500

Rack travel in mm: < 7.50 Del.quantity cm3/: 0 **

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 2.00...2.40 travel mm

rpm : 900 2nd speed

: 6.70...7.10 travel mm

rpm : 1150 3rd speed

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1300

: 289.0...291.0 Speed rpm : 500 Del.quantity 1000 : (286.0...294.0) Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) : 5.00 cm3 Spread cm3 : 8.00 1000 : (9.00) Spread 1000 s: (12.0) RATED SPEED 1st version BREAKAWAY Control Lever 1st version position degrees: 63...71 1mm rack travel less than Testing: 1st rack travel in: 12.20 full load rack tr: 12.20 rpm : 1190...1200 rpm : 1190...1200 Speed Speed 2nd rack travel in: 4.00 Speed rpm : 1345...1375 4th rack travel in: 1500 STARTING FUEL DELIVERY rpm : 0.00...1.00Speed Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 * LOW IDLE 1 1000 s: (-) Control Lever position degrees: 8...16 Speed rpm : 100 Del.quantity cm3/ : 0 ** 1000 s: (-) Testing: : 100 Speed rpm Minimum rack trave: 8.90 : 250 HIGH IDLE rpm Rack travel in mm : 7.30...7.50 Rack travel in mm: 2.00 1st version Speed rpm : 500 Rack travel in mm : < 8.00 : 405...465 Speed rom Del.quantity cm3/: < 50.0 Aneroid/Altitude 1000 s: (-) Compensator Test 2nd version Speed rpm : 500 Rack travel in mm : 8.60...8.80 1st version Setting : 500 Del.quantity cm3/: 125.0 Speed rpm hPa : 1300 Pressure : 13.20...13.30 LOW IDLE Rack travel mm Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 * Measurement 1/min: 500 Speed 1000 s: (-) 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 270 Remarks: Rack travel in m: 9.20...9.30
3rd pressure hPa : 790 : MAN-NR. 2-7858 Rack travel in m: 11.40...11.80 * applies to cylinders 4, 5, 6, 8, 10 ** applies for cylinders 1, 2, 3, 7, 9 START CUT-OUT and 11 1/min: 170 (190) Speed APPLICATION FUEL DELIVERY CHARACTERISTICS Ship 1st version Ameroid pressure h: -

Note remarks

Test sheet : MAN 21,0 a1 Edition : 01.09.89 : 7.2.89 Replaces Test oil : ISO-4113

: 0 402 640 813 Combination no.

Injection pump

Pump designation : PE12P120A520LS7812

: 0 412 620 807 EP type number

Governor

Governor design. : RQV250...1150PA902-1

: 0 421 813 728 Governer no.

Customer-spec. information Customer : MAN

: D2842LYE Engine

: 735.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 Prestroke mm : (4.85...5.05)

Rack travel in mm : 9.00...12.00 Firing order

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 345 Phasing

.: 0.50 (0.75) Tolerance + -.,

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 *

100 s: (-) rpm : 500 3rd speed Rack travel in mm : < 7.50 Del.quantity cm3/: 0 **

100 s: (-)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.50 travel mm

: 500 2nd speed rpm

: 3.80...4.20 travel mm

: 850 3rd speed rpm

: 6.50...6.90 travel mm

4th speed : 1150 rpm

: 9.50...9.70 travel mm

5th speed : 1400 rem

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1150 1st version Speed Aneroid pressure h: 1600 Aneroid pressure h: -: 289.0...291.0 rpm : 500 Del.quantity Speed Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) 1000 : (286.0...294.0) cm3 : 5.00 Spread 1000 : (9.00) cm3 : 8.00 Spread 1000 s: (12.0) RATED SPEED **BREAKAWAY** 1st version Control lever position degrees: 57...65 1st version 1mm rack travel less than Testing: 1st rack travel in: 12.20 full load rack tr: 12.20 rpm : 1190...1200 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1275...1315 STARTING FUEL DELIVERY Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed Speed : 100 rpm Del.quantity cm3/: 100.0...120.0 * LOW IDLE 1 1000 s: (-) Control Lever position degrees: 18...26 Speed rpm : 100 Del.quantity cm3/: 0 ** 1000 s: (-) Testing: Speed : 100 rpm Minimum rack trave: 8.90 Rack travel in mm: 17.50 : 250 rpm Rack travel in mm : 7.30...7.50 HIGH IDLE Rack travel in mm: 2.00 : 430...490 Speed 1st version rpm Speed rpm : 500 Rack travel in mm: < 8.00 Aneroid/Altitude Del.quantity cm3/: < 50.0 **
1000 s: (-) Compensator Test 1st version 2nd version Speed rpm : 500 Rack travel in mm : 8.60..8.80 Setting : 500 Speed rpm Del.quantity cm3/: 17 1000 s: (-) hPa : 1300 Pressure : 13.20...13.30 Rack travel mm LOW IDLE Measurement 1/min: 500 Speed Speed rpm : 250 Rack travel in mm : 7.30...7.50 1st pressure hPa : -Rack travel in m: 8.90...9.10 Del.quantity cm3/: 52.0...60.0 * 2nd pressure hPa : 500 1000 s: (-) Rack travel in m: 9.30...9.40 3rd pressure hPa : 1150 Remarks: Rack travel in m: 11.80...12.20 : MAN-NR. 2-7960 START CUT-OUT * applies to cylinders 4, 5, 6, 8, 10 1/min: 170 (190) ** applies for cylinders 1, 2, 3, 7, 9 Speed and 11

FUEL DELIVERY CHARACTERISTICS

Ship

: 4.90...5.00 : (4.85...5.05) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 12-1-5-9-8-3-4-11-10-2-6-7 Firing order : MAN 21.0 a2 : 01.09.89 Test sheet Edition : 7.2.89 Replaces Test oil : ISO-4113 : 0-45-60-105-120-165-Phasing 180-225-240-285-300-Combination no. : 0 402 640 814 : 345 Phasing : 0.50 (0.75) Injection pump Tolerance + - ., Pump designation : PE12P120A520LS7812 : 0 412 620 807 EP type number Time to cyl. no. : 12 Governor Governor design. : RQV250...1150PA902 BASIC SETTING : 0 421 813 720 Governer no. rpm: 1150 1st speed Customer spec. information Rack travel in mm : 12.20...12.30 Customer : MAN Del.quantity cm3/: 24.9...25.1 : D2842LXE Engine : 662.0 100 s: (24.6...25.4) 1st version kW : 2300 Rated speed Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil rpm : 500.0 inlet temp. , C : 38...42 2nd speed Rack travel in mm: 8.7...8.9 Del.quantity cm3/: 14.1...14.7 Overflow valve 100 s: (13.8...15.0) : 1 417 413 025 cm3 : 0.8Spread 100 s: (1.2) Inlet press., bar: 1.50 rpm : 250 3rd speed Rack travel in mm : 7.30...7.50 Test nozzle holder Del.quantity cm3/ : 5.2...6.0 * 100 s: (-) : 1 688 901 019 assembly Openina : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate : 0,8 GUIDE SLEEVE TRAVEL diameter mm rom : 250 1st speed : 1.10...1.50 travel mm rpm : 500 : 3.80...4.20 : 1 680 750 067 Test lines 2nd speed travel mm rpm : 850 3rd speed Outside diameter : 6.50...6.90 x Wall thickness travel mm : 6.00x1.50x1000 4th speed : 1150 x Length mm rpm travel mm : 9.50...9.70 : 1400 (A) Injection pump setting values 5th speed rpm : 13.00...14.00 Insp. values in parentheses travel mm Set equal delivery quant. per values

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm : 1200 Rack travel in mm : 15.20...17.80

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

			1		
FULL LOAD DE	LIV. AT	FULL LOAD STOP	‡	FUEL DELIVERY CHARA	ACTERISTICS
Spread	<i>'</i> :	1300 249.0251.0 (246.0254.0) 5.00	+++++++++++++++++++++++++++++++++++++++	1st version Aneroid pressure h: Speed rpm Del.quantity cm3/: 1000 s:	500
RATED SPEED			Ī	BREAKAWAY	
1st version Control leve position d		5765	T + + + + + + + + + + + + + + + + + + +	1st version 1mm rack travel les full load rack tra	11.20
2nd rack tra	rpm :	11901200	†	Speed rpm : STARTING FUEL DELIV	11901200 /ERY
4th rack tra Speed	vel in:	1450 0.001.00	+++++++++++++++++++++++++++++++++++++++	Speed rpm : Del.quantity cm3/ : 1000 s:	: 100.0120.0 *
LOW IDLE 1 Control leve position d		1826	† + +	Speed rpm: Del.quantity cm3/: 1000 s:	(
Minimum rack	trave: rpm : in mm : in mm :	250 7.307.50 2.00	+++++++++++++++++++++++++++++++++++++++	Rack travel in mm: HIGH IDLE 1st version Speed rpm: Rack travel in mm:	500 < 7.50
Aneroid/Alti Compensator			†	Del.quantity cm3/: 1000 s: 2nd version	(-)
Pressure	hPa :	500 1300	+ + + + + + + + + + + + + + + + + + + +	Speed rpm: Rack travel in mm: Del.quantity cm3/: 1000 s:	< 50.0 **
Rack travel Measurement Speed	mm : 1/min :	12.2012.30	+ + + + + + + + + + + + + + + + + + + +	3rd version Speed rpm : Rack travel in mm : Del.quantity cm3/ : 1000 s:	125.0
2nd pressure Rack trave 3rd pressure Rack trave	l in m: hPa : l in m: hPa : l in m:	9.309.40	+++++++	LOW IDLE	250 7.307.50 52.060.0 *
START CUT-OU		200 (220)	†	Remarks:	MAN-NR. 7959
Speed	17111171	בטט (בבט)	Ť	•	ログリー・カイブング

* applies to cylinders 4, 5, 6, 8, 10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

: 4.50...4.60 : (4.45...4.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 12- 1- 5- 9- 8- 3-Firing order 4- 11- 10- 2- 6- 7 Test sheet : MAN 21,0 b : 02.01.90 Edition Replaces : 16.6.89 Test oil : ISO-4113 : 0-45-60-105-120-165-180-225-240-285-300-Phasing Combination no. : 0 402 640 815 : 345 Phasing ' Tolerance + - ... 0.50 (0.75)Injection pump Pump designation: PE12P120A520LS7824 : 0 412 620 816 Time to cyl. no. : 12 EP type number Governor Governor design. : RQV250...1150PA902-2 BASIC SETTING : 0 421 813 760 Governer no. 1st speed rpm: 1150 Customer-spec. information Rack travel in mm : 13.60...13.70 Customer : MAN : D2842LYE Del.quantity cm3/: 30.1...30.3 Engine 1st version kW : 735.0 100 s: (29.8...30.6) Rated speed : 2300 Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 500 Rack travel in mm : 9.10...9.30 inlet temp. .. C : 38...42 Del.quantity cm3/: 14.0...15.1 Overflow valve 100 s: (14.6...15.4) : 1 417 413 025 Spread cm3 : 0.8100 s: (1.2) Inlet press., bar: 1.50 3rd speed rpm : 250 Rack travel in mm : 7.20...7.40 Del.quantity cm3/ : 5.2...6.0 * 100 s: (-) Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0,8 1st speed rpm : 250 travel mm : 1.20...1.40 2nd speed rpm: 450 Test Lines : 1 680 750 067 travel mm : 3.10...3.70 3rd speed rpm : 750 Outside diameter x Wall thickness travel mm : 5.80...6.20 4th speed rpm: 1150 : 6.00x1.50x1000 x Length mm : 9.50...9.70 travel mm 5th speed rpm: 1400 (A) Injection pump setting values travel mm : 13.00...14.00 Insp. values in parentheses Set equal delivery quant. GUIDE SLEEVE POSITION per values ____ Control-lever position Degree: -1 BEGINNING OF DELIVERY Speed rpm : 1200 Test pressure, bar: 25...27

Rack travel in mm : 15.20...17.80

	FULL LOAD DELIV. AT	FULL LOAD STOP	†	FUEL DELIVERY CHARACTERISTICS
	1st version Speed rpm: Aneroid pressure h: Del.quantity: 1000: Spread cm3: 1000:	1300 301.0303.0 (298.0306.0) 5.00	+ + + + + + + + + + + + + + + + + + + +	1st version Aneroid pressure h: - Speed rpm : 500 Del.quantity cm3/: 149.0151.0 1000 s: (146.0154.0) Spread cm3 : 8.00 1000 s: (12.0)
	RATED SPEED		‡	(333 31 (72.0)
	1st version Control Lever		‡	BREAKAWAY
	position degrees:	5866	†	1st version 1mm rack travel less than
	2nd rack travel in:	11901200 4.00	† +	full load rack tr: 12.60 Speed rpm : 11901200
	Speed rpm : 4th rack travel in:	12901320 1400	†	STARTING FUEL DELIVERY
	LOW IDLE 1 Control lever	0.001.00	 	Speed rpm : 100 Del.quantity cm3/ : 100.0120.0 * 1000 s: (-)
	Minimum rack trave:	100	 - - -	Speed rpm : 100 Del.quantity cm3/: 0 ** 1000 s: (-) Rack travel in mm : 17.50
	Speed rpm : Rack travel in mm : Rack travel in mm : Speed rpm :	7.307.50 2.00	 	HIGH IDLE 1st version
	Aneroid/Altitude Compensator Test		‡	Speed rpm : 500 Rack travel in mm : < 7.00 Del.quantity cm3/ : 0 ** 1000 s: (-)
	Pressure hPa:	500 1300 13.6013.70	† † † †	2nd version Speed rpm : 500 Rack travel in mm : < 7.50 Del.quantity cm3/ : < 50.0 1000 s: (-)
	Measurement Speed 1/min:	500	 	3rd version Speed rpm : 500 Rack travel in mm : 8.408.60
	1st pressure hPa : Rack travel in m: 2nd pressure hPa :		Ī	Del.quantity cm3/: 125.0 1000 s: (-)
	Rack travel in m: 3rd pressure hPa:	9.509.60	‡	LOW IDLE
	Rack travel in m:	12.0012.40	‡	Speed rpm : 250 Rack travel in mm : 7.207.40
START CUT-OUT			‡	Del.quantity cm3/ : 52.060.0 1000 s: (-)
	Speed 1/min:	170 (190)	+	

Remarks:

: MAN-NR. 2-7960

* applies to cylinders 4, 5, 6, 8, 10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

Note remarks

: MB 22,0 c : 01.09.89 Test sheet Edition : 7.7.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump

Pump designation : PE12P120A520LS7826

EP type number : 0 412 620 817

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

: 736.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.40...4.50 : (4.35...4.55)

Rack travel in mm: 19.00...21.00 Firing order: 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm : 1150 1st speed

Rack travel in mm : 15.20...15.30

Del.guantity cm3/: 31.0...31.2

100 s: (30.7...31.5)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 350.0 2nd speed

Rack travel in mm : 5.3...5.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.40 travel mm

2nd speed 500 rpm :

3.00...3.50 travel mm

3rd speed rpm: 800

: 4.30...4.80 travel mm

: 1200 4th speed rpm

: 8.30...8.80 travel mm

: 1250 5th speed rpm

: 9.30...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed Aneroid pressure h: 1800 : 310.0...312.0 Del.quantity 1000 : (307.0...315.0) Spread cm3: 6.00 1000 : (10.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 14.20 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 : 1270...1300 Speed rom 4th rack travel in: 1350 Speed : 0.00...1.00 rpm LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm Minimum rack trave: 7.30 : 350 mqn Rack travel in mm : 5.30...5.90 CONSTANT REGULATION rpm : 350...600 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : -: 8.00...8.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 9.40...9.50 2nd pressure hPa : 1100 Rack travel in m: 13.60...13.90 START CUT-OUT Speed 1/min: 310 (330)

1st version Aneroid pressure h: 1800 : 750 Speed rpm Del.quantity cm3/: 301.0...311.0 1000 s: (298.0...314.0) cm3 : 10.00 Spread 1000 s: (15.0) Aneroid pressure h: 1800 rpm_ : 1150 Speed Del.quantity cm3/: 240.0...243.0 * 1000 s: (237.0...246.0) cm3 : 10.00Spread 1000 s: (15.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 120.0...122.0 1000 s: (117.0...125.0) cm3 : 10.00Spread 1000 s: (15.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 14.20 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

* = Set at reduced-delivery stop.

GO2

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : SCA 11,1 b : 02.10.89 : 31.3.89 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 836

Injection pump

Pump designation : PE6P120A720RS7126 EP type number : 0 412 626 815

Governor

Governor design. : RQV200...1000PA725-1

: D 421 813 552 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DSC11 18 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 : (4.95...5.15) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 14.10...14.20

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm: 4.5...4.9

Del.quantity cm3/: 1.5...1.9 100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.20...1.60 travel mm

2nd speed

rpm : 350 : 2.40...3.00 travel mm

rpm : 650 3rd speed

: 4.40...5.00 travel mm

rpm : 1045 4th speed

: 8.40...8.60 travel mm

rpm : 1160 5th speed

travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 234.0...239.0)

cm3 : 6.00Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testina:

1st rack travel in: 13.10

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1145...1175 4th rack travel in: 1300 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

rpm : 100 Speed Minimum rack trave: 6.10

rpm : 225 Speed

Rack travel in mm: 4.50...4.70
Rack travel in mm: 2.00
Speed rpm: 340...400

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 14.10...14.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 510

Rack travel in m: 13.00...13.10
3rd pressure hPa : 250
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000 Speed

Del.quantity cm3/: 223.0...231.0 1000 s: (221.0...233.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 150.0...154.0

1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...325.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: 13, before

Firing sequence of engine: 1-5-3-6-2-4.

Prestroke mm : 3.60...3.70 BOSCH INJ. PUMP TEST SPECIFICATIONS : (3.55...3.75) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : PEN 16,2 b1 : 02.10.89 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Combination no. : 0 402 646 857A Tolerance + - ... : 0.30 (0.75)Injection pump Time to cyl. no. : 1 Pump designation: PE6P130A720RS7150 : 0 412 636 808 BASIC SETTING EP type number Governor Governor design. : RQV250...900PA881 Governor no. : 0 421 813 676 rpm : 700 1st speed Rack travel in mm : 12.60...12.70 Customer-spec. information Del.quantity cm3/: 38.3...38.5 : PENTA Customer 100 s: (37.9...38.9) : TAMD 162 A (PD) Engine 1st version kW : 450.0 Spread cm3 : 0.5: 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0
Rack travel in mm : 3.7...3.9
Del.quantity cm3/ : 1.7...2.2 Test oil inlet temp. , C . : 38...42 100 s: (1.4...2.4) Overflow valve Spread cm3 : 0.5100 s: (0.7) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 0.90...1.30 Opening travel mm rpm : 350 pressure, bar : 207...210 2nd speed : 2.00...2.60 travel mm 3rd speed rpm : 700 Orifice plate travel mm : 3.90...4.50 4th speed rpm : 1075 : 0,8 diameter mm : 8.10...8.30 travel mm 5th speed rpm: 1160 Test lines : 1 680 750 067 : 9.30...9.70 travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness : 6.00x1.50x1000 Control-lever position x Length mm Degree: -1 Speed rpm : 1100 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version

rpm : 700

Aneroid pressure h: 1200

Speed

Test pressure, bar: 25...27

Del.quantity : 383.0...389.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testina:

1st rack travel in: 11.60

rpm : 1070...1080 Speed

2nd rack travel in: 4.00

rpm : 1145...1175 Speed

4th rack travel in: 1300

rom : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

rpm : 100 Speed Minimum rack trave: 5.30

: 250 rpm

Rack travel in mm : 3.70...3.90

CONSTANT REGULATION

rpm : 250...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1200 Pressure

: 12.60...12.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.60...8.80

2nd pressure hPa : 340

Rack travel in m: 8.80...8.90

3rd pressure hPa : 970

Rack travel in m: 12.20..12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 215.0...219.0

1000 s: (212.0...222.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1070...1080 Speed

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.70...3.90
Del.quantity cm3/: 17.0...22.0
1000 s: (14.5...24.5)
Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

APPLICATION

Navy

Note remarks

Test sheet : VOL 12,1 f : 24.11.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 884

Injection pump

Pump designation : PE6P130A320RS7113 : 0 412 636 803 EP type number

Governor

Governor design. : RQ750PA926 : 0 421 801 486 Governer no.

Customer-spec. information

: VOLVO-TRUCK Customer

: TIP121 LG Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.30 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 12.90...13.00

Del.quantity cm3/: 30.0...30.3

100 s: (29.7...30.6)

cm3 : 0.5Spread

100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 300.0...303.0 Del.quantity 1000 : (297.0...306.0)

cm3 : 5.00

Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 19...27

Testing:

1st rack travel in: 11.90 rpm : 748...753 Speed

2nd rack travel in: 4.00 rpm : 777...792 Speed

4th rack travel in: 840

rpm : 0.00...1.00Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11,90 rpm : 748...753 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 310.0...350.0 1000 s: (306.0...354.0)

HIGH IDLE

1st version Speed Spread rpm : 782 cm3 : 5.00 1000 s: (7.00)

Remarks:

APPLICATION

Generator

Note remarks

: MB 11,0 t 3 Test sheet : 20.10.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 888

Injection pump

Pump designation: PE6P120A320LS7808-2

: 0 412 626 833 EP type number

Governor

Governor design. : RQV350..1050PA842-4

: D 421 813 806 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M441 LA Engine

1st version kW : 243.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

-360

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASTC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.7 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.40...1.60 travel mm

rpm : 800 2nd speed : 3.90...4.30 travel mm

rpm : 1100 3rd speed

: 6.80...7.20 travel mm

rpm : 1200 4th speed

travel mm : 8.50...9.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Archantity Tel.quantity cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 14.10 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 8...16 Testing: : 200 Speed LDUI Minimum rack trave: 7.30 rpm Rack travel in mm : 5.10...5.70 CONSTANT REGULATION rpm : 350...600 Speed TORQUE CONTROL Dimension a mm : 0.50 : 1050 2nd speed rpm Rack travel in m: 15.10...15.30 3rd speed rpm : 1000 Rack travel in m: 15.30...15.50 4th speed rpm : 985 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure : 14.30...14.50 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.40...10.60 2nd pressure hPa : 600 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1250

Archaid pressure h: 1000

: 224.0...226.0 : (221.0...229.0)

Rack travel in m: 14.50...14.70 4th pressure hPa : 1350 Rack travel in m: 14.90...15.10 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT Speed 1/min : 270 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 : 1050 Speed rpm Del.quantity cm3/: 245.0...249.0 1000 s: (242.0...252.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 750
Del.quantity cm3/ : 253.0...257.0
1000 s: (250.0...260.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY**

1st version 1mm rack travel less than full load rack tr: 14.10 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

: 5.20...5.30 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (5.15...5.35)
Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : DAF 11,7 k : 03.11.89 Test sheet Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 402 646 893 BASIC SETTING Injection pump Pump designation : PE6P12OA32ORS7194 EP type number : D 412 626 834 1st speed rpm: 850 Governor Rack travel in mm : 12.70...12.80 Governor design. : RQ250/1000PA936 : 0 421 801 507 Governer no. Del.quantity cm3/: 22.9...23.1 Customer-spec, information 100 s: (22.6...23.4) Customer : DAF cm3 : 0.5: WS 268 Spread Engine 100 s: (0.9) 1st version kW : 268.0 : 2000 Rated speed 2nd speed rpm : 250.0
Rack travel in mm : 7.0...7.4
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread TEST BENCH REQUIREMENTS Test oil cm3 : 0.8 inlet temp. ., C : 38...42 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Inlet press., bar: 1.50 Speed rpm: 550 Rack travel in mm: 15.20...16.40 Test nozzle holder : 1 688 901 019 assembly FULL LOAD DELIV. AT FULL LOAD STOP **Opening** pressure, bar : 207...210 1st version rpm : 850 Speed Aneroid pressure h: 1000 Orifice plate Del.quantity : 229.0...231.0 1000 : (226.0...234.0) Spread cm3 : 5.00 1000 : (9.00) diameter mm : 0,8 Test lines : 1 680 750 075 RATED SPEED Outside diameter x Wall thickness

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550 Rack travel in mm : 15.8

Testing:
1st rack travel in: 11.70 Speed rpm : 1035...1050 2nd rack travel in: 4.00

rpm : 1130...1160 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.40

LOW TDLE 1

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 6.2

Testina:

Speed rpm : 100 Minimum rack trave: 7.70 : 250 Speed rpm

Rack_travel in mm : 6.10...6.30 Rack_travel in mm : 2.00

Speed rom : 335...375

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.70...12.80

: 1000 2nd speed rpm

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 13.30...13.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.00

2nd pressure hPa : 650

Rack travel in m: 12.60...12.70

3rd pressure hPa : 440 Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 174.0...176.0 1000 s: (171.0...179.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.70

rpm : 1035...1050 Speed

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 6.10...6.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 11,7 k1 : 05.01.90 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 646 894 Injection pump Pump designation : PE6P120A320RS7194 EP type number : 0 412 626 834 Governor Governor design. : RQ250/1000PA936-1 : 0 421 801 508 Governer no. Customer-spec. information Customer : DAF : WS 295 Engine : 295.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Openina** pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)BASIC SETTING rpm: 850 1st speed Rack travel in mm : 13.20...13.30 Del.quantity cm3/: 24.5...24.7 100 s: (24.2...25.0) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 7.0...7.4 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm: 550 Rack travel in mm: 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 850 Speed Aneroid pressure h: 1000 245.0...247.0 1000 : (242.0...250.0) Del.quantity cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Setting point: rpm Rack travel in mm: 15.8 Testing: 1st rack travel in: 12.20 Speed rpm : 1035...1050 2nd rack travel in: 4.00

rpm : 1125...1155 Speed 4th rack travel in: 1250 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 6.2 Testing: Speed rpm: 100 Minimum rack trave: 7.70 Speed rpm: 250
Rack travel in mm: 6.10...6.30
Rack travel in mm: 2.00
Speed rpm: 335...375 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 13.50...13.60 2nd speed rpm : 1000 Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1000 Pressure : 13.20...13.30 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.70 2nd pressure hPa : 460 Rack travel in m: 12.50...12.60 3rd pressure hPa : 310 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 171.0...173.0 1000 s: (168.0...176.0) **BREAKAWAY**

full load rack tr: 12.20 Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.10...6.30

Remarks:

:

1st version

1mm rack travel less than

Note remarks

: DAF 11,7 k2 : 13.12.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 895

Injection pump

Pump designation : PE6P120A320RS7194 EP type number : 0 412 626 834

Governor

Governor design. : RQV275...1000PA939

: D 421 813 829 Governer no.

Customer—spec. information Customer : DAF

Engine : WS 268

: 268.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm : 7.0...7.4 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.10...1.50 travel mm

rpm : 400 2nd speed

: 2.40...3.20 travel mm rpm : 800 3rd speed

travel mm : 5.20...5.60 4th speed rpm : 1000

travel mm : 7.30...7.50 5th speed rpm : 1300

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1060 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000

Del.quantity : 229.0...234.0)

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 11.70 Speed rpm: 1030...1040 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1300 rpm : 0.00...1.40Speed LOW IDLE 1 Control lever position degrees: 8...16 Testing: Speed rpm : 100 Minimum rack trave: 7.70 rpm : 250 Speed Rack travel in mm : 6.10...6.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure : 12.70...12.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...11.00 2nd pressure hPa : 480 Rack travel in m: 12.20...12.30 3rd pressure hPa : 350 Rack travel in m: 11.30...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 174.0...176.0 1000 s: (171.0...179.0) **BREAKAWAY**

1st version

G16

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1030...1040

LOW IDLE

Speed rpm: 250

Rack travel in mm : 6.10...6.30

Remarks:

- .

Note remarks

: DAF 11,7 j2 : 12.01.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 895

Injection pump

Pump designation : PE6P120A320RS7202 EP type number : 0 412 626 835

Governor Governor design. : RQV250...1000PA939

: D 421 813 829 Governer no.

Customer-spec. information Customer : DAF

Engine : WS 268

1st version kW : 268.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.0...4.4

Del.quantity cm3/: 2.3...2.9 100 s: (2.0...3.2)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.70...1.10 travel mm

rpm : 400 2nd speed

travel mm : 2.40...3.20

rpm : 800 3rd speed

: 5.20...5.60 travel mm

rpm : 1000 4th speed

: 7.30...7.50 rpm : 1300 travel mm

5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1060 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000 Del.quantity : 215.0...217.0 1000 : (212.0...220.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 56...64 Testing: 1st rack travel in: 10.40 rpm : 1030...1040 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.40LOW IDLE 1 Control Lever position degrees: 8...16 Testina: Speed rom Minimum rack trave: 5.70 rpm Rack travel in mm : 4.10...4.30 CONSTANT REGULATION rpm : 270...380 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1000 Pressure : 11.40...11.50 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 8.70...8.90 2nd pressure hPa : 440 Rack travel in m: 10.70...10.80 3rd pressure hPa : 290 Rack travel in m: 9.60...9.80 FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.00...4.40
Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)

:

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

G18

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 148.0...150.0 1000 s: (145.0...153.0)

Note remarks

Test sheet : DAF 11,7 j1 : 15.12.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 895

Injection pump

Pump designation : PE6P120A320RS7202 : D 412 626 835 EP type number

Governor

Governor design. : RQV275...1000PA939

: 0 421 813 829 Governer no.

Customer-spec. information Customer : DAF

: WS 268 Engine

: 268.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 4.0...4.4
Del.quantity cm3/: 2.3...2.9

100 s: (2.0...3.2)

cm3 : 0.8 100 s: (1.2) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed : 1.10...1.50

travel mm 2nd speed rpm : 400

: 2.40...3.20 travel mm rpm : 800 3rd speed

: 5.20...5.60 travel mm

rom : 1000 4th speed

: 7.30...7.50 travel mm

rpm : 1300 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1060 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000 Del.quantity : 215.0...217.0 Del.quantity : 213.0...220.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 10.40 Speed rpm : 1030...1040 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1300 Speed rpm : 0.00...1.40 LOW IDLE 1 Control lever position degrees: 8...16 Testing: Speed rpm Minimum rack trave: 5.70 Speed rpm : 250 Rack travel in mm : 4.10...4.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure : 11.40...11.50 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa :-Rack travel in m: 8.70...8.90 2nd pressure hPa : 440 Rack travel in m: 10.70...10.80 3rd pressure hPa : 290 Rack travel in m: 9.60...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 148.0...150.0 1000 s: (145.0...153.0)

1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250

Rack travel in mm: 4.00...4.40 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

G20

BREAKAWAY

1st version

Note remarks

: MB 11,0 t 4 Test sheet Edition : 05.01.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 897

Injection pump

Pump designation : PE6P120A320LS7808

EP type number : 0 412 626 816

Governor

Governor design. : RQ300/950PA762-10

: D 421 801 511 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M441 LA Engine

1st version kW : 249.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.50...13.70

Del.guantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 900

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Rack travel in mm: 20.0

Testina: 1st rack travel in: 13.60 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 5.8 Testing: Speed rpm Minimum rack trave: 7.70 : 300 Speed rpm Rack travel in mm : 5.70...6.00 Rack travel in mm: 2.00 : 380...420 Speed rpm TORQUE CONTROL Dimension a mm : 0.30 rpm : 950 2nd speed Rack travel in m: 14.60...14.80 : 700 3rd speed rom Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure : 13.50...13.70 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 550 Rack travel in m: 12.70...12.90 3rd pressure hPa : 1150 Rack travel in m: 13.80...14.00 4th pressure hPa : 1250 Rack travel in m: 14.30...14.50 5th pressure hPa : -Rack travel in m: 8.90...9.20 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1350 Speed rpm : 950 Del.quantity cm3/: 238.0...240.0 1000 s: (235.0...243.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1350 : 800 Speed rpm Del.quantity cm3/: 236.0...239.0 1000 s: (233.0...242.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

full load rack tr: 13.60

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (201.0...229.0)

rpm : 990...1005

Remarks:

Speed

:

Note remarks

Test sheet : SCA 14,2 b : 24.11.89 Edition : 1.9.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 804

Injection pump

Pump designation : PE8P120A920/4LS7003

EP type number : 0 412 628 801

Governor

Governor design. : RQ900PA528 : 0 421 801 127 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DS 14 41, DSI 14 42 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-

: 0-45-90-135-180-225-Phasing

270-315

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.6...18.8

100 s: (18.3...19.1)

cm3 : 0.6Spread

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

: 186.0...188.0 Del.quantity

1000 : (183.0...191.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Rack travel in mm: 16.5

Testing:

1st rack travel in: 11.80 rpm : 900...905 Speed

2nd rack travel in: 4.00

rpm : 941...955 Speed

4th rack travel in: 1000

rpm : 0.00...1.00 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80 rpm : 900...955 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm: 4.90...5.10 Spread cm3: 4.00

1000 s: (7.00)

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1986-06-04

Start of delivery - engine: DS 14 - 18, before TDC DSI 14 - 17, before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

APPLICATION

Generator

Note remarks

: MB 14,7 a 4 Test sheet : 03.11.89 Edition Replaces : 28.11.88 : ISO-4113 Test oil

Combination no. : 0 402 648 817

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQ300/1050PA762-5 : 0 421 801 399 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 A Engine

: 260.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed Aneroid pressure h: 650

: 201.0...203.0 Del.quantity 1000 : (198.0...206.0)

: 5.00 Cm3

Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1050 Testing: 1st rack travel in: 11.80 Speed : 1050 rpm Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) rpm : 1095...1110 Speed 2nd rack travel in: 4.00 cm3 : 8.00 1000 s: (12.0) : 1170...1200 Speed Spread rpm 4th rack travel in: 1300 Aneroid pressure h: 1050 : 0.00...1.50 Speed rom : 700 Speed rom Del.quantity cm3/: 215.0...219.0 LOW IDLE 1 1000 s: (212.0...222.0) Setting point w/out bumper spring rpm : 300 cm3 : 8.00 Speed Spread Rack travel in mm: 6.2 1000 s: (12.00 Aneroid pressure h: 1050 : 850 Testing: Speed rpm Del.quantity cm3/: 206.0...210.0 1000 s: (203.0...213.0) Speed : 200 rpm Minimum rack trave: 8.00 cm3 : 8.00 : 300 Speed Spread rpm 1000 s: (12.0) Rack travel in mm : 6.00...6.40 Aneroid pressure h: -Rack travel in mm : 2.00 : 500 Speed rom : 380...420 Speed rpm Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) TORQUE CONTROL cm3 : 8.00 Dimension a mm : 0.75 Spread : 1050 1000 s: (12.0) 2nd speed rpm Rack travel in m: 12.80...13.00 : 850 3rd speed rom Rack travel in m: 13.70...14.00 BREAKAWAY 4th speed rpm : 700 Rack travel in m: 14.40...14.60 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 11.80 Compensator Test rpm : 1095...1110 Speed STARTING FUEL DELIVERY 1st version Setting : 600 Speed rpm hPa : 650 Pressure Speed rom Del.quantity cm3/: 175.0...190.0 : 14.10...14.30 Rack travel mm 1000 s: (171.0...194.0) Measurement 1/min: 600 Remarks: Speed 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 * Increase in control-rod travel with 2nd pressure hPa : 400 respect to setting at least 0.1 mm Rack travel in m: 13.40...13.70 3rd pressure hPa : 850 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.40...11.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 a 5 Test sheet : 03.11.89 : 29.3.89 Edition Replaces : ISO-4113 Test oil

: 0 402 648 825 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQV300..1050PA797-3 Governer no. : D 421 813 627

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442 A

: 260.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.4

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.20...1.40

2nd speed rpm : 600

: 4.90...5.10 travel mm

rpm : 1075 3rd speed

: 7.40...7.60 travel mm

4th speed rpm: 1100

: 8.00...8.20 travel mm

5th speed rpm : 1150

: 9.00...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 400 Rack travel in m: 13.40...13.70 1st version 3rd pressure hPa : 850 Rack travel in m: 14.20...14.30 * rpm : 500 Speed Aneroid pressure h: 650 : 201.0...203.0 Del.quantity 4th pressure hPa : -1000 : (198.0...206.0) Rack travel in m: 11.30...11.60 : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT 1/min : 220 (240) RATED SPEED Speed FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 56...62 1st version Aneroid pressure h: 1050 Testina: : 1050 1st rack travel in: 11.80 Speed rpm Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) rpm : 1090...1100 Speed 2nd rack travel in: 4.00 cm3 : 8.00 rpm : 1155...1185 Spread Speed 1000 s: (12.0) 4th rack travel in: 1300 Aneroid pressure h: 1050 rpm : 0.00...1.00Speed Speed rpm : 700 Del.quantity cm3/ : 215.0...219.0 1000 s: (212.0...222.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 15...23 Spread 1000 s: (12.0) Aneroid pressure h: 1050 Testing: : 850 Speed Speed rpm rpm Del.quantity cm3/: 206.0...210.0 1000 s: (203.0...213.0) Minimum rack trave: 7.70 : 300 Speed rpm cm3 : 8.00 Rack travel in mm : 6.00...6.40 Spread 1000 s: (12.0) Aneroid pressure h: -CONSTANT REGULATION Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 rpm : 300...450 Speed 1000 s: (146.0...154.0) TORQUE CONTROL Dimension a mm : 1.40 Spread cm3 : 8.00 1000 s: (12.0) 2nd speed rpm : 1050 Rack travel in m: 12.70...12.90 3rd speed rpm : 850 Rack travel in m: 13.70...14.00 4th speed rpm : 700 **BREAKAWAY** Rack travel in m: 14.30...14.50 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 11.80 Compensator Test rpm : 1090...1100 Speed STARTING FUEL DELIVERY 1st version Setting : 600 Speed rpm hPa : 650 : 100 Pressure Speed rpm Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0) Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed Remarks: 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 * Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 14,7 e Test sheet : 15.08.89 Edition Replaces : 2.11.87 Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump

Pump designation : PE8P120A320LS7801-1

: 0 412 628 818 EP type number

Governor

Governor design. : RQV350..1050PA842-3

: D 421 813 622 Governer no.

Customer-spec, information

: DAIMLER-BENZ Customer

: 0M442 LA Engine

: 320.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-270-315 Phasing

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.90...2.10 2nd speed rpm : 700

: 4.00...4.40 travel mm

rpm : 1100 3rd speed

: 6.80...7.20 travel mm

rpm : 1200 4th speed

: 8.30...8.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1185 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

4th pressure hPa : 1250 Rack travel in m: 15.20...15.40 Speed rpm : 600 Aneroid pressure h: 750 : 212.0...214.0 5th pressure hPa : -Del.quantity Rack travel in m: 11.60...11.80 1000 : (209.0...217.0) : 5.00 Spread cm31000 : (9.00) START CUT-OUT 1/min : 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 58...66 1st version Aneroid pressure h: 1250 Testina: : 1050 1st rack travel in: 14.20 rpm Del.quantity cm3/: 227.0...230.0 1000 s: (224.0...233.0) rpm : 1090...1100 Speed 2nd rack travel in: 4.00 cm3 : 8.00 1000 s: (12.0) : 1190...1220 Spread Speed rom 4th rack travel in: 1300 Aneroid pressure h: 1250 Speed rpm : 0.00...1.50: 900 Speed rpm Del.quantity cm3/: 238.0...242.0 LOW IDLE 1 1000 s: (235.0...245.0) Control Lever cm3 : 8.00 position degrees: 10...18 Spread 1000 s: (12.0) Aneroid pressure h: 1250 Testing: Speed rpm : 1050 Del.quantity cm3/ : 156.0...159.0 * 1000 s: (153.0...162.0) Speed rpm : 100 Minimum rack trave: 7.40 rpm Rack travel in mm : 5.50...6.10 cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -CONSTANT REGULATION Speed rpm : 500 Del.quantity cm3/ : 150.0...152.0 1000 s: (147.0...155.0) rpm : 350...550 Speed TORQUE CONTROL cm3 : 8.00 Dimension a mm Spread : 0.20 : 1050 1000 s: (12.0) 2nd speed rpm Rack travel in m: 15.20...15.40 rpm : 975 3rd speed Rack travel in m: 15.40...15.60 BREAKAWAY 1st version Aneroid/Altitude 1mm rack travel less than Compensator Test full load rack tr: 14.20 rpm : 1090...1100 1st version Speed Setting Speed : 600 STARTING FUEL DELIVERY rpm hPa : 750 Pressure Rack travel mm : 14.50...14.70 Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 12.20...12.40 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80 * = Set at reduced-delivery stop. 3rd pressure hPa : 900

Rack travel in m: 14.70...14.80

Note remarks

: MB 14,7 a10 : 01.09.89 Test sheet Edition Replaces : 11.3.88 : ISO-4113 Test oil

Combination no. : 0 402 648 833

Injection pump

Pump designation : PE8P12OA32OLS7801-1

: 0 412 628 818 EP type number

Governor

Governor design. : RQV350..1050PA866-3

: 0 421 813 703 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 A Engine

: 260.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 5.6...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

rpm : 600 2nd speed

: 4.90...5.10 travel mm

rpm : 1100 3rd speed

: 8.00...8.50 travel mm

rpm : 1170 4th speed

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1090 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1100 : 181.0...183.0 Del.quantity 1000 : (178.0...186.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 59...67 Testing: 1st rack travel in: 11.80 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rom Minimum rack trave: 7.30 Speed rpm : 350 Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL Dimension a mm : 1.60 Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 12.80...12.90 : 750 2nd speed rpm Rack travel in m: 14.40...14.60 : 950 3rd speed rpm Rack travel in m: 13.50...13.60 rpm : 830 4th speed Rack travel in m: 14.30...14.50 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm Pressure hPa : -Rack travel mm : 11.20...11.50 Measurement 1/min: 600 Speed 1st pressure hPa : 420

Rack travel in m: 11.90...12.10 2nd pressure hPa : 600 Rack travel in m: 13.60...13.80 START CUT-OUT 1/min: 270 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed : 700 rpm Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: 1100 : 1050 Speed rpm Del.quantity cm3/: 152.0...154.0 * 1000 s: (149.0...157.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0) Remarks: * = Set at reduced-delivery stop.

H05

Note remarks

: MB 14,7 a 8 : 07.07.89 Test sheet Edition : 21.8.87 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 841

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RQ300/1050PA762-5 : 0 421 801 399 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M442 A

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-4- 1 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

Aneroid pressure h: 650
Del.quantity : 203.0...205.0
1000 : (200.0...208.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1050 Testina: 1st rack travel in: 11.80 : 1050 Speed rpm Speed rpm : 1095...1110 Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) 2nd rack travel in: 4.00 : 1170...1200 cm3 : 8.00rpm Spread Speed 4th rack travel in: 1300 1000 s: (12.0) Aneroid pressure h: 1050 Speed rpm : 0.00...1.50Speed rpm : 700 Del.quantity cm3/ : 215.0...219.0 1000 s: (212.0...222.0) 700 LOW IDLE 1 Setting point w/out bumper spring cm3 : 8.00 : 300 rpm Spread 1000 s: (12.0) Rack travel in mm: 6.3 Aneroid pressure h: 1050 Speed : 850 Testina: rpm Del.quantity cm3/: 206.0...210.0 : 200 Speed rpm 1000 s: (203.0...213.0) Minimum rack trave: 8.00 cm3 : 8.00 : 300 Spread Speed rpm 1000 s: (12.0) Rack travel in mm : 6.20...6.40 Aneroid pressure h: -Rack travel in mm : 2.00 Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 : 380...420 Speed rpm 1000 s: (146.0...154.0) TORQUE CONTROL : 0.75 cm3 : 8.00Dimension a mm Spread : 1050 1000 s: (12.0) 2nd speed rpm Rack travel in m: 12.80...13.00 3rd speed rpm : 850 Rack travel in m: 13.70...14.00 **BREAKAWAY** 4th speed rpm : 700 Rack travel in m: 14.40...14.60 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 11.80 Compensator Test rpm : 1095...1110 Speed STARTING FUEL DELIVERY 1st version Setting : 600 Speed rom Speed rpm : 100 Del.quantity cm3/ : 175.0...190.0 hPa : 650 Pressure : 14.10...14.30 Rack travel mm 1000 s: (171.0...194.0) Measurement $1/\min : 600$ Remarks: Speed 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 * Increase in control-rod travel with 2nd pressure hPa : 400 respect to setting at least 0.1 mm Rack travel in m: 13.40...13.70 3rd pressure hPa : 850 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.40...11.70 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 j : 02.10.89 Test sheet Edition : 7.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 844

Injection pump

Pump designation : PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/1050PA717-2

: 0 421 801 439 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M442 LA Engine

: 353.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - . . : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.9...6.5

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 100 s: (1.0) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

: 234.0...237.0 Del.quantity

1000 : (231.0...240.0) cm3 : 6.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1600 Testina: 1st rack travel in: 13.40 Speed : 1050 rpm Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1150...1180 cm3 : 8.00 Speed Spread 1000 s: (12.0) 4th rack travel in: 1300 Aneroid pressure h: 1600 rpm : 0.00...1.50Speed : 850 Speed rpm Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) LOW IDLE 1 Setting point w/out bumper spring cm3 : 8.00 Speed : 300 Spread rom Rack travel in mm: 6.2 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 Testina: Speed : 200 rom 1000 s: (146.0...154.0) Minimum rack trave: 7.80 : 300 cm3 : 8.00rpm Spread Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 1000 s: (12.0) : 380...420 Speed MOM BREAKAWAY TORQUE CONTROL 1st version Dimension a mm : 0.40 : 1050 1mm rack travel less than 2nd speed rom Rack travel in m: 14.40...14.60 rpm : 850 full load rack tr: 13.40 3rd speed Rack travel in m: 15.00...15.30 rpm : 1095...1110 Speed STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test : 100 Speed rom Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) 1st version Setting : 600 Speed rpm hPa : 900 Remarks: Pressure : 13.60...13.80 Rack travel mm * Increase in control-rod travel with Measurement 1/min: 600 respect to setting at least 0.1 mm Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.70...13.90 * 4th pressure hPa : 1350 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 k : 06.10.89 Test sheet Edition : 16.6.88 Replaces : ISO-4113 Test oil

: 0 402 648 845 Combination no.

Injection pump

Pump designation : PE8P12OA32OLS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQV300..1050PA797-5

: 0 421 813 702 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : OM442 LA

: 353.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.40 travel mm

rpm : 800 2nd speed

: 5.80...6.10 travel mm

rpm : 1120 3rd speed

: 8.20...8.80 travel mm

rpm : 1180 4th speed

travel mm : 9.60...10.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900 : 234.0...237.0 Del.quantity 1000 : (231.0...240.0) cm3 : 5.00 Spread : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 13.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 18...26 Testing: : 200 Speed rpm Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 5.90...6.50 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 1.30 nd speed rpm : 1050 Rack travel in m: 14.40...14.60 2nd speed : 800 3rd speed rpm Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 900 : 13.60...13.80 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050

Rack travel in m: 13.70...13.90 *

H11

4th pressure hPa : 1350 Rack travel in m: 14.50...14.70 5th pressure hPa : Rack travel in m: 10.20...10.50 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 rpm : 1050 Speed Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed : 800 rpm Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

* Increase in control-rod travel with

respect to setting at least 0.1 mm

Remarks:

Note remarks

Test sheet : MAN 14,5 d : 07.04.89 Edition : 4.11.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 850

Injection pump

Pump designation : PE8P120A520LS7818 EP type number : 0 412 628 830

Governor

Governor design. : RQV250...1150PA860

: 0 421 813 626 Governer no.

Customer-spec. information : MAN Customer

: D2848LXE 40 Engine

: 500.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wali thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.60...4.70 Prestroke mm : (4.55...4.75)

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 500.0 2nd speed Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 14.9...15.1

100 s: (28.6...29.4)

3rd speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.20 travel mm

rpm : 450 2nd speed : 3.50...4.10 travel mm

: 850 3rd speed rpm

: 6.50...6.90 travel mm

rpm : 1150 4th speed

: 8.40...8.60 travel mm

: 1450 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Speed

Degree: -1 rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1150 1st version Speed Aneroid pressure h: 1600 Del.quantity : 289.0...291.0 1000 : (286.0...294.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 149.0...151.0
1000 s: (146.0...154.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED **BREAKAWAY** 1st version 1st version 1mm rack travel less than Control lever position degrees: 62...70 full load rack tr: 12.50 Speed rpm : 1190...1200 Testing: 1st rack travel in: 12.50 Speed rpm : 1190...1200 STARTING FUEL DELIVERY 2nd rack travel in: 4.00 Speed rpm: 1360...1390 4th rack travel in: 1450 Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
 1000 s: (-) rpm : 0.00...1.00 Speed LOW IDLE 1 HIGH IDLE Control lever position degrees: 8...16 1st version Speed rpm : 500 Testing: Rack travel in mm: < 7.00 : 100 Speed rom Del.quantity cm3/: 0 ** 1000 s: (-) Minimum rack trave: 8.90 Speed rpm : 250 Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 2nd version Speed rpm : 500 Rack travel in mm : < 7.50 rpm : 425...485 Speed Del.quantity cm3/: < 50.0 ** 1000 s: (-) Aneroid/Altitude Compensator Test 3rd version Speed rpm : 500 Rack travel in mm : 8.20...8.40 1st version Setting Speed Del.quantity cm3/: 125.0 ** : 500 rom hPa : 1600 Rack travel mm : 13.50...13.60 LOW IDLE Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/: 52.0...60.0
1000 s: (-) Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 250 Rack travel in m: 9.30...9.40 Remarks: : MAN-NR. 7927 3rd pressure hPa : 900 Rack travel in m: 11.90...12.20 * applies to cylinders 2, 3, 4 and 8
** applies for cylinders 1, 5, 6, and 7 START CUT-OUT **APPLICATION** 1/min: 200 (220) Speed Ship FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MAN 14,5 e Edition : 02.01.90 : 7.4.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 851

Injection pump

Pump designation : PE8P120A520LS7818 EP type number : 0 412 628 830

Governor

Governor design. : RQV250...1150PA902 Governor no. : 0 421 813 720

Customer-spec. information Customer : MAN

: D2848LXE 40 Engine

1st version kW : 500.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 30.7...30.9

100 s: (30.4...31.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 500.0 Rack travel in mm : 8.90...9.10 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

rpm : 250 3rd speed

Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.40...1.60

rpm : 450 2nd speed

: 3.40...4.00 travel mm

3rd speed rpm : 850

: 6.30...6.90 travel mm

: 1150 4th speed rom

: 9.40...9.60 travel mm

: 1450 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1210 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 1st version rpm : 1150 Speed Aneroid pressure h: 1300 Aneroid pressure h: -Del.quantity : 307.0...312.0) rpm : 500 Del.quantity cm3/: 149.0...151.0 : 5.00 1000 s: (146.0...154.0) 1000 : (9.00) RATED SPEED **BREAKAWAY** 1st version 1st version Control lever 1mm rack travel less than position degrees: 57...65 full load rack tr: 13.10 rpm : 1190...1200 Testing: Speed 1st rack travel in: 13.10 rpm : 1190...1200 STARTING FUEL DELIVERY Speed 2nd rack travel in: 4.00 Speed rpm : 1285...1315 4th rack travel in: 1450 Speed rpm : 100 Del.quantity cm3/: 100.0...120.0 rpm : 0.00...1.00Speed 1000 s: (-) LOW IDLE 1 HIGH IDLE Control Lever position degrees: 19...27 1st version rpm : 500 Speed Testing: Rack travel in mm: < 7.00 : 100 Speed rpm Del.quantity cm3/ : 0 ** 1000 s: (-) Minimum rack trave: 8.90 rpm : 250 Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 2nd version : 430...490 rpm Speed rpm Rack travel in mm: < 7.50 Del.quantity cm3/ : < 50.0 ** 1000 s: (-) Aneroid/Altitude Compensator Test 3rd version 1st version Speed : 500 rpm Rack travel in mm : 8.30...8.50 Setting Del.quantity cm3/: 125.0 ** Speed : 500 rpm hPa : 1300 Pressure : 14.10...14.20 Rack travel mm LOW IDLE Speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 52.0...60.0 1000 s: (-) Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 100 Remarks: : MAN-NR. 7944

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7 Rack travel in m: 9.30...9.40
3rd pressure hPa : 470 Rack travel in m: 11.90...12.20 START CUT-OUT **APPLICATION** 1/min: 200 (220) Ship Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: FIA 17,2 e : 13.12.89 Test sheet Edition : 30.5.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 854

Injection pump

Pump designation: PE8P130A920/5LS7822

EP type number : 0 412 638 802

Governor

Governor design. : RQV300...950PA905 : 0 421 813 723 Governer no.

Customer-spec, information Customer : IVECO-FIAT

: 8280.42.001 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 688 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.10...5.20 : (5.05...5.25) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1- 8- 4- 3- 6- 5- 7- 2 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 550 1st speed

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 23.5...23.8

100 s: (23.1...24.1)

Spread cm3 : -

100 s: (1.2)

rpm : 300.02nd speed Rack travel in mm : 6.1...6.5 Del.quantity cm3/ : 2.0...2.6 100 s: (1.6...3.0)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 0.60...1.10 travel mm 2nd speed rpm : 350

: 2.10...2.50 travel mm

rpm : 600 3rd speed : 3.80...4.40

travel mm rpm : 950 4th speed

: 7.20...7.40 rpm : 1200 travel mm

5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1020 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 550 Speed Aneroid pressure h: 900 Del.quantity : 233.0...241.5) 1000 : (231.5...241.5) 1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 55...61

Testing:

1st rack travel in: 10.60 rpm : 990...1000 2nd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed rpm : 200 Minimum rack trave: 7.70 : 300 Speed rpm

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

rpm : 380...480 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm hPa : 900 Pressure

: 11.60...11.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 440

Rack travel in m: 11.10...11.20 3rd pressure hPa : 400

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 950 rpm

Del.quantity cm3/: 215.0...222.0 1000 s: (211.5...225.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 173.0...176.0 1000 s: (169.5...179.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 990...1000 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 210.0...240.0

1000 s: (206.0...244.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: MB 14,7 o : 13.12.89 Test sheet Edition : 29.3.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 855

Injection pump

Pump designation : PE8P120A320LS7823 : 0 412 628 835 EP type number

Governor

Governor design. : RQV350..1050PA870-5

: 0 421 813 735 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 353.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 5.0...5.6 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.70...5.10 travel mm

rpm : 1100 3rd speed

: 7.60...8.20 travel mm

rpm : 1175 4th speed

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

4th pressure hPa : 1250 rpm : 600 Speed Aneroid pressure h: 900 Rack travel in m: 14.50...14.70 : 234.0...237.0 5th pressure hPa : Del.quantity 1000 : (231.0...240.0) cm3 : 5.00 Rack travel in m: 9.70...10.00 Spread : (9.00) START CUT-OUT 1000 1/min: 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 62...70 1st version Aneroid pressure h: 1600 Testina: 1st rack travel in: 13.40 rpm : 1050 Speed rpm : 1090...1100 Del.quantity cm3/: 252.0...256.0 Speed 1000 s: (249.0...259.0) 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 cm3 : 8.00Spread 1000 s: (12.0) rpm : 0.00...1.00Aneroid pressure h: 1600 Speed Speed : 800 rpm Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 10...18 Spread 1000 s: (12.0) Aneroid pressure h: 1600 Testing: : 1050 Speed rpm : 250 Speed rpm Del.quantity cm3/: 184.0...187.0 Minimum rack trave: 7.10 1000 s: (181.0...190.0) Speed rpm Rack travel in mm : 5.00...5.60 cm3 : 8.00 Spread 1000 s: (12.0) CONSTANT REGULATION Aneroid pressure h: rpm : 350...550 Speed rpm : 500 Del.quantity cm3/: 141.0...143.0 Speed 1000 s: (138.0...146.0) TORQUE CONTROL Dimension a mm cm3 : 8.00 : 0.50 Spread 2nd speed rpm : 1050 Rack travel in m: 14.40...14.60 3rd speed rpm : 800 1000 s: (12.0) Rack travel in m: 15.30...15.50 **BREAKAWAY** 1st version Aneroid/Altitude 1mm rack travel less than Compensator Test full load rack tr: 13.40 rpm : 1090...1100 1st version Speed Setting : 600 STARTING FUEL DELIVERY Speed rpm Pressure hPa : 900 : 13.60...13.80 Rack travel mm Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 350 Remarks: Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 * Increase in control-rod travel with respect to setting at least 0.1 mm Rack travel in m: 13.70...13.90 *

Note remarks

Test sheet : MB 14,7 p Edition : 23.06.89 : 29.3.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 858

Injection pump

Pump designation: PE8P120A320LS7816-10

EP type number : 0 412 628 836

Governor

Governor design. : RQ300/1050PA717-2

: 0 421 801 439 Governer no.

Customer-spec. information : DB-LKW Customer

: 0M442 LA Engine

: 353.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order

: 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

.: 0.50 (0.75) Tolerance + -,

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.6 Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.9...6.5

Del.guantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 600

Aneroid pressure h: 900

: 234.0...237.0 Del.quantity 1000 : (231.0...240.0)

: 6.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm : 20.0 Testina: 1st rack travel in: 13.40 Speed rpm : 1095...1110 2nd rack travel in: 4.00 : 1150...1180 Speed rpm 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 6.2 Testing: speed rpm : 200 Minimum rack trave: 7.80 Speed rpm: 300 Rack travel in mm: 5.90...6.50 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm : 0.40 : 1050 2nd speed rpm Rack travel in m: 14.40...14.60 3rd speed rpm : 800 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 900 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.70...13.90 4th pressure hPa : 1500 Rack travel in m: 14.80...15.00 5th pressure hPa : -Rack travel in m: 9.90...10.20 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 800 Speed rpm Del.quantity cm3/: 263.0...267.0 1000 s: (260.0...270.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Note remarks

Test sheet : MB 14,7 a11 Edition : 24.05.89 : 14.4.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 859

Injection pump

Pump designation: PE8P12OA320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RQV350..950PA866-4

Governer no. : 0 421 813 737

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442 A

1st version kW : 264.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 930

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.5...6.1 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.40...1.60 travel mm

2nd speed : 425 rpm

: 2.40...2.60 travel mm

: 800 3rd speed rpm

: 5.30...5.60 travel mm

: 1000 4th speed rpm

: 7.80...8.20 travel mm

rpm : 1100 5th speed

travel mm : 9.40...9.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 930 Speed Aneroid pressure h: 950 : 206.0...208.0 Del.quantity 1000 : (203.0...211.0) : 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 51...59 Testing: 1st rack travel in: 13.00 rpm : 980...990 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Testing: : 250 Speed rpm Minimum rack trave: 8.20 : 350 rpm Rack travel in mm : 5.60...6.10 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL : 1.30 Dimension a mm Torque control curve - 1st version 1st speed rpm : 930 Rack travel in m: 14.00...14.10 ad speed rpm : 750 2nd speed Rack travel in m: 15.30...15.50 3rd speed : 900 rpm Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : -Pressure : 11.00...11.40 Rack travel mm Measurement

1/min: 600

1st pressure hPa : 450

Rack travel in m: 11.80...12.00 2nd pressure hPa : 700 Rack travel in m: 13.90...14.10 START CUT-OUT Speed 1/min: 270 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 950 Speed rpm Del.quantity cm3/: 229.0...233.0 1000 s: (226.0...236.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 950 Speed : 930 rpm Del.quantity cm3/: 167.0...169.0 * 1000 s: (164.0...172.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 143.0...145.0 1000 s: (140.0...148.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 980...990 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) Remarks: * = Set at reduced-delivery stop.

Speed

Note remarks

: MB 14,7 q Test sheet : 05.01.90 Edition : 11.5.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 864

Injection pump

Pump designation : PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/950PA762-7 Governer no. : 0 421 801 480

Customer—spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 353.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 600

Aneroid pressure h: 1000 Del.quantity : 254.0...256.0 1000 : (251.0...259.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1600 Testina: 1st rack travel in: 14.20 rpm : 950 Speed Del.quantity cm3/: 270.0...273.0 1000 s: (267.0...276.0) rpm : 990...1005 Speed 2nd rack travel in: 4.00 cm3 : 8.00 : 1070...1100 Speed Spread MON 1000 s: (12.0) 4th rack travel in: 1150 rpm : 0.00...1.50Aneroid pressure h: 1600 Speed Speed rpm Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) LOW IDLE 1 Setting point w/out bumper spring : 300 cm3 : 8.00 Spread man Rack travel in mm: 6.2 1000 s: (12.0) Aneroid pressure h: -Testing: Speed rom Del.quantity cm3/: 145.0...147.0 : 200 Speed **CDM** 1000 s: (142.0...150.0) cm3 : 8.00 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 5.90...6.50 Spread 1000 s: (12.0) Rack travel in mm : 2.00 : 380...420 Speed rpm **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.90 1st version : 950 1mm rack travel less than 2nd speed rpm Rack travel in m: 15.20...15.40 full load rack tr: 14.20 3rd speed rpm : 890 rpm : 990...1005 Rack travel in m: 15.50...15.70 Speed STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed : 100 rpm Del.quantity cm3/: 240.0...260.0 1st version 1000 s: (236.0...264.0) Setting : 600 Speed man Pressure hPa : 1000 Remarks: Rack travel mm : 14.60...14.80 : Measurement 1/min : 600Speed 1st pressure hPa : 350 Rack travel in m: 12.20...12.40 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 Rack travel in m: 15.60...15.80 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 a14 Test sheet Edition : 20.10.89

Replaces

: TSO-4113 Test oil

Combination no. : 0 402 648 865

Injection pump

Pump designation: PE8P120A320LS7801-4

: 0 412 628 839 EP type number

Governor

Governor design. : RQV350...1050PA866-5

: 0 421 813 767 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M442 A

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 5.4...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

rpm : 600 2nd speed

travel mm : 4.90...5.10

rpm : 1100 3rd speed

travel mm : 8.00...8.50

rpm : 1170 4th speed

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 12.60...12.80 rpm : 1050 Speed 2nd pressure hPa : 600 Rack travel in m: 13.20...13.40 Aneroid pressure h: 1100 : 181.0...183.0 Del.quantity 1000 : (178.0...186.0) cm3 : 5.00 START CUT-OUT Spread 1000 : (9.00) 1/min : 270 (250) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 59...67 1st version Aneroid pressure h: 1100 Speed rpm : 700 Del.quantity cm3/ : 213.0...217.0 Testing: 1st rack travel in: 11.80 1000 s: (210.0...220.0) rpm : 1090...1100 Speed cm3 : 8.00 2nd rack travel in: 4.00 Spread 1000 s: (12.0) rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.50 Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/ : 152.0...154.0 * 1000 s: (149.0...157.0) LOW IDLE 1 cm3 : 8.00 Control Lever Spread 1000 s: (12.0) position degrees: 7...15 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 143.0...145.0 1000 s: (140.0...148.0) Testing: Speed : 250 rom Minimum rack trave: 7.30 cm3 : 8.00 : 350 Spread rom Rack travel in mm : 5.60...5.80 1000 s: (12.0) CONSTANT REGULATION rpm : 350...550 BREAKAWAY Speed 1st version TORQUE CONTROL 1mm rack travel less than Dimension a mm : 1.60 Torque control curve - 1st version st speed rpm : 1050
Rack travel in m: 12.80...12.90 full load rack tr: 11.80 1st speed rpm : 1090...1100 Speed : 700 2nd speed rpm Rack travel in m: 14.40...14.60 STARTING FUEL DELIVERY 3rd speed rpm : 950 Rack travel in m: 13.50...13.60 Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 : 830 4th speed rpm Rack travel in m: 14.30...14.50 1000 s: (176.0...204.0) Aneroid/Altitude Remarks: Compensator Test * = Set at reduced-delivery stop. 1st version Setting : 600 Speed rpm hPa : -Pressure Rack travel mm : 10.90...11.20 Measurement 1/min: 600 Speed

1st pressure hPa : 420

Note remarks

: MB 14,7 a15 : 13.10.89 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 648 870 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-1

: 0 412 628 818 EP type number

Governor

Governor design. : RQV350..1050PA866-6

: 0 421 813 810 Governer no.

Customer-spec. information Customer : MB-ISW

: 0M442 A Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.4...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.80...5.10 travel mm

rpm : 1100 3rd speed

: 7.70...8.10 travel mm

rpm : 1175 4th speed : 9.00...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 11.80...12.00 rpm : 1050 Speed 2nd pressure hPa : 600 Aneroid pressure h: 1100 Rack travel in m: 13.40...13.60 Del.quantity : 181.0...183.0 1000 : (178.0...186.0) : 5.00 START CUT-OUT cm3 Spread 1000 : (9.00)1/min : 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 61...69 Aneroid pressure h: 1100 : 700 Testing: Speed rpm Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) 1st rack travel in: 11.80 : 1090...1100 Speed rpm cm3 : 8.002nd rack travel in: 4.00 Spread rpm : 1160...1190 1000 s: (12.0) Speed 4th rack travel in: 1300 Aneroid pressure h: 1100 : 0.00...1.00 Speed rpm : 1050 Speed COM Del.quantity cm3/: 152.0...154.0 * 1000 s: (149.0...157.0) LOW IDLE 1 Spread cm3 : 8.00 Control Lever 1000 s: (12.0) position degrees: 10...18 Aneroid pressure h: rpm : 500 Testing: Speed speed rpm : 200 Minimum rack trave: 7.50 Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) : 350 cm3 : 8.00 Speed rpm Spread Rack travel in mm : 5.40...6.00 1000 s: (12.0) CONSTANT REGULATION rpm : 350...550 **BREAKAWAY** Speed 1st version TORQUE CONTROL : 1.60 1mm rack travel less than Dimension a mm Torque control curve - 1st version full load rack tr: 11.80 : 1050 1st speed rpm rpm : 1090...1100 Rack travel in m: 12.80...12.90 Speed : 700 2nd speed rom Rack travel in m: 14.40...14.60 STARTING FUEL DELIVERY : 950 3rd speed rom Rack travel in m: 13.50...13.60 : 100 : 830 Speed rpm 4th speed rom Rack travel in m: 14.30...14.50 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Aneroid/Altitude Remarks: Compensator Test 1st version * = Set at reduced-delivery stop. Setting : 600 Speed mom. hPa : -Pressure : 11.10...11.40 Rack travel mm Measurement 1/min: 600 Speed

1st pressure hPa : 420

Note remarks

: MB 14,7 a16 : 15.12.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 402 648 878 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801 : 0 412 628 806

EP type number Governor

Governor design. : RQ300/950PA762-9

Governer no.

: 0 421 801 510

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 269.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

Aneroid pressure h: 800 Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1200 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm : 6.2 Testing: Speed : 200 ₩) Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 6.00...6.40 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.75 : 950 2nd speed rpm Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speedi rpm Préssure hPa : 800 : 14.00...14.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.30...13.60 3rd pressure hPa : 950 Rack travel in m: 14.10...14.20 * 4th pressure hPa : -Rack travel in m: 10.60...11.00 START CUT-OUT 1/min : 220 (240) Speed

Aneroid pressure h: 1150 : 950 Speed rom Del.quantity cm3/: 190.0...193.0 1000 s: (187.0...196.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1150 : 750 Speed rpm Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

Edition

: MB 14,7 a17 : 01.12.89

Replaces Test oil

: ISO-4113

Combination no. : 0 402 648 879

Injection pump

Pump designation : PE8P120A320LS7801-4

EP type number : 0 412 628 839

Governor

Governor design. : RQV350..1050PA842-5

Governer no.

: 0 421 813 836

Customer-spec, information

Customer

: MERCEDES-BENZ

Engine

: 0M442 LA

1st version kW

: 320.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test Lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing

: 0-45-90-135-180-225-

270-315

.: 0.50 (0.75) Tolerance + -,

Time to cyl. no. : 8

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 350

: 1.90...2.10 travel mm

rpm : 700 2nd speed

: 4.00...4.40 travel mm

rpm : 1100 3rd speed

: 6.80...7.20 travel mm

rpm : 1200 4th speed

travel mm

: 8.30...8.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 600 4th pressure hPa : 1250 Speed Rack travel in m: 15.50...15.70 Aneroid pressure h: 750 : 212.0...214.0 5th pressure hPa : Del.quantity Rack travel in m: 11.60...11.80 : (209.0...217.0) 1000 : 5.00 Spread cm3 : (9.00) START CUT-OUT 10000 1/min : 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 58...66 1st version Aneroid pressure h: 1250 Testina: rpm : 1050 1st rack travel in: 14.20 Speed Del.quantity cm3/: 227.0...230.0 rpm : 1090...1100 Speed 1000 s: (224.0...233.0) 2nd rack travel in: 4.00 rpm : 1190...1220 : 8.00 Spread cm3 Speed 4th rack travel in: 1300 1000 s: (12.0) rpm : 0.00...1.50 Aneroid pressure h: 1250 Speed 900 Speed rpm Del.quantity cm3/: 238.0...242.0 1000 s: (235.0...245.0) LOW IDLE 1 Control lever cm3 : 8.00position degrees: 10...18 Spread 1000 s: (12.0) Aneroid pressure h: 1250 Testing: : 1050 Speed : 100 Speed rpm rom Del.quantity cm3/: 156.0...159.0 * 1000 s: (153.0...162.0) Minimum rack trave: 7.40 Speed rpm : 350 Rack travel in mm : 5.50...6.10 cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -CONSTANT REGULATION : 500 rpm : 350...550 Speed Speed rom Del.quantity cm3/: 150.0...152.0 1000 s: (147.0...155.0) TORQUE CONTROL Dimension a mm cm3 : 8.00 : 0.20 Spread nd speed rpm : 1050 Rack travel in m: 15.20...15.40 1000 s: (12.0) 2nd speed rpm : 975 3rd speed Rack travel in m: 15.40...15.60 BREAKAWAY Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 14.20 peed rpm : 1090...1100 1st version Speed Setting : 600 STARTING FUEL DELIVERY Speed rom hPa : 750 Pressure : 14.50...14.70 Rack travel mm Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 12.20...12.40 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80 * = Set at reduced-delivery stop. 3rd pressure hPa : 900 Rack travel in m: 14.70...14.80

Note remarks

Test sheet Edition : MAN 18,2 d : 07.04.89 : 1.7.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 649 802

Injection pump

Pump designation : PE10P120A520LS7811 EP type number : 0 412 629 802

Governor

Governor design. : RQV250...1150PA860 : D 421 813 626 Governer no.

Customer—spec. information Customer : MAN

: D 2840 LXE Engine

: 603.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 Prestroke mm

: (4.85...5.05) Rack travel in mm : 9.00...12.00

Firing order : 10-9-4-1-8--6-3-5-2 7

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 28.4...28.6

100 s: (28.1...28.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 500.0 2nd speed Rack travel in mm: 8.7...8.9

Del.quantity cm3/: 14.1...14.7

100 s: (13.8...15.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

2nd speed rpm : 750

: 5.90...6.50 rpm : 1150 travel mm

3rd speed

: 8.40...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1300

Del.quantity : 284.0...289.0)

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED **BREAKAWAY** 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 12.30 Speed rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1345...1375 Speed 4th rack travel in: 1450 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever HIGH IDLE position degrees: 8...16 Testing: rpm : 100 Speed Minimum rack trave: 8.90 rpm : 250 Rack travel in mm : 7.30...7.50 Rack travel in mm: 2.00 rpm : 410...470 Speed Aneroid/Altitude Compensator Test 1st version Speed Setting rpm : 500 hPa : 1300 Speed Pressure Rack travel mm : 13.30...13.40 Measurement LOW IDLE 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 270 Rack travel in m: 9.20...9.30 3rd pressure hPa : 790 Remarks: Rack travel in m: 11.30...11.70 START CUT-OUT 1/min: 200 (220) Speed Ship FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1190...1200 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 100.0...120.0**
1000 s: (-) 1st version Speed rpm : 500 Rack travel in mm : < 7.50 Del.quantity cm3/: 0 * 1000 s: (-) 2nd version rpm : 500 Rack travel in mm : < 8.00 Del.quantity cm3/: < 50.0 * 1000 s: (-) 3rd version rpm : 500 Rack travel in mm : 8.60...8.80 Del.quantity cm3/: 125.0 * 1000 s: (-) Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0
1000 s: (-) * applies to cylinders 1, 2, 3, 7 and 9
** applies for cylinders 4, 5, 6, 8 and 10 APPLICATION

Speed

Aneroid pressure h: -

rpm : 500

Note remarks

Test sheet : MAN 18,2 e Edition : 07.04.89 Replaces : 30.9.88 Test oil : ISO-4113

Combination no. : 0 402 649 806

Injection pump

Pump designation : PE10P120A520LS7819 : 0 412 629 804 EP type number

Governor

Governor design. : RQV300...1050PA896

Governer no.

: 0 421 813 715

Customer-spec. information Customer : MAN

: D 2840 LF Engine

1st version kW : 405.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00

: (4.85...5.05) Rack travel in mm : 9.00...12.00 Firing order

: 10- 9- 4- 1- 8-- 6- 3- 5- 2 7

: 0-45-72-117-144-189-216-261-288-333 Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.2 Del.guantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm

500 2nd speed rpm

: 3.10...3.70 travel mm

: 800 3rd speed rpm

: 5.50...5.90 travel mm

: 1050 4th speed rpm

: 7.60...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed Aneroid pressure h: 1000

: 233.0...235.0 : (230.0...238.0) Del.quantity 1000 cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 48...56 Testina: 1st rack travel in: 10.00 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 12...20 Testing: Speed rom : 100 Minimum rack trave: 6.60 : 300 rpm Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 320...435 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.10...11.20 ad speed rpm : 750 2nd speed Rack travel in m: 11.40...11.50 3rd speed rpm : 900 Rack travel in m: 11.30...11.40 Aneroid/Altitude Compensator Test 1st version Settina Speed rom : 500 hPa : 1000 Pressure : 11.40...11.50 Rack travel mm

Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.20...9.40 2nd pressure hPa : 400 Rack travel in m: 9.60...9.70 3rd pressure hPa : 600

Rack travel in m: 10.40...10.70 START CUT-OUT 1/min : 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 1050 Speed rpm Del.quantity cm3/: 220.0...224.0 1000 s: (217.0...227.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 156.0...158.0 1000 s: (153.0...161.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Spread cm3 : 8.001000 s: (12.00)

Remarks: : MAN-NR. 2-7932

Note remarks

: MAN 18,2 d1 Test sheet : 24.11.89 Edition : 7.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 649 807

Injection pump

Pump designation : PE10P120A520LS7811 : 0 412 629 802

EP type number Governor

Governor design. : RQV250...1150PA902 Governor no. : 0 421 813 720

Customer-spec. information Customer : MAN

: D 2840 LX Engine

1st version kW : 603.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 Prestroke mm

: (4.85...5.05)

Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1- 8-- 6- 3- 5- 2 7 Firing order

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 13.70...13.80

Del.guantity cm3/: 29.6...29.8

100 s: (29.3...30.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 500 Rack travel in mm : 9.2...9.4 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

Spread cm3 : 0.8

100 s: (1.2)
3rd speed rpm: 250
Rack travel in mm: 7.30...7.50 Del.quantity cm3/ : 5.2...6.0

100 s: (-)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.50 travel mm

: 500 2nd speed rpm

: 3.80...4.20 travel mm

rpm : 850 3rd speed

: 6.50...6.90 travel mm : 1150

4th speed rpm

: 9.50...9.70 travel mm

rpm : 1400 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP	FUEL DELIVERY CHARACTERISTICS
1st version Speed rpm : 1150 Aneroid pressure h: 1600 Del.quantity : 296.0298.0	1st version Aneroid pressure h: - Speed rpm: 500 Del.quantity cm3/: 149.0151.0 1000 s: (146.0154.0) Spread cm3: 8.00 1000 s: (12.0)
RATED SPEED	-
1st version Control lever position degrees: 5765	BREAKAWAY 1st version 1mm rack travel less than
Testing: 1st rack travel in: 12.70 Speed rpm: 11901200 2nd rack travel in: 4.00	full load rack tr: 12.70 Speed rpm : 11901200
Speed rpm : 12901320 4th rack travel in: 1450 Speed rpm : 0.001.00	STARTING FUEL DELIVERY
LOW IDLE 1 Control lever position degrees: 1826	Speed rpm : 100 Del.quantity cm3/ : 100.0120.0** 1000 s: (-)
Testing: Speed rpm : 100 Minimum rack trave: 8.90	Speed rpm : 100 Del.quantity cm3/ : 0 * 1000 s: (-) Rack travel in mm : 17.50
Speed rpm : 250 Rack travel in mm : 7.307.50 Rack travel in mm : 2.00 Speed rpm : 430490	HIGH IDLE 1st version
Aneroid/Altitude Compensator Test	Speed rpm : 500 Rack travel in mm : < 7.50 Del.quantity cm3/: 0 * 1000 s: (-)
1st version Setting Speed rpm : 500 Pressure hPa : 1600 Rack travel mm : 13.7013.80	2nd version Speed rpm : 500 Rack travel in mm : < 8.00 Del.quantity cm3/ : < 50.0 * 1000 s: (-)
Measurement Speed 1/min: 500	3rd version Speed rpm : 500 Rack travel in mm : 8.909.10
1st pressure hPa : - Rack travel in m: 9.209.40 2nd pressure hPa : 100	Del.quantity cm3/: 125.0 1000 s: (-)
Rack travel in m: 9.609.70 3rd pressure hPa : 470 Rack travel in m: 12.2012.60	LOW IDLE Speed rpm : 250
START CUT-OUT	Rack travel in mm : 7.307.50 Del.quantity cm3/ : 52.060.0
Speed 1/min: 200 (220)	1000 s: (-) Remarks:

: MAN-NR. 2-7961

* applies to cylinders 1, 2, 3, 7 and 9
** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

Note remarks

: MB 18,3 L 2 : 01.12.89 : 17.2.89 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 649 808

Injection pump

Pump designation : PE10P120A320LS7809-1

: 0 412 629 801 EP type number

Governor

Governor design. : RQ300/1050PA762-6

: 0 421 801 471 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M443 A Engine

: 331.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening 1 continue 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 20.00...21.00

: 10- 9- 4-Firing order

: 0-45-72-117-144-189-216-261-288-333 Phasina

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.4...6.8

Del.guantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-Lever position

> Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 185.0...187.0 : (182.0...190.0) Del.quantity 1000

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.30 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1250 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 7.1 Testing: Speed : 200 rpm Minimum rack trave: 9.20 rpm : 300 Rack travel in mm : 6.80...7.40 Rack travel in mm : 2.00 Speed rpm : 395...435 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.30...13.40 2nd speed rpm : 750 Rack travel in m: 14.70...15.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 11.50...11.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 12.10...12.30 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 750

Del.quantity cm3/: 202.0...205.0 1000 s: (199.0...208.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) Spread cm3 : 8.00 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

Speed

full load rack tr: 12.30

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

rpm : 1095...1110

Remarks:

J15

Note remarks

: MAN 18,2 h Test sheet : 01.09.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 649 809

Injection pump

Pump designation : PE10P120A520LS7825

EP type number : 0 412 629 805

Governor

Governor design. : RQV250...1150PA902-3

: 0 421 813 761 Governer no.

Customer-spec. information Customer : MAN

: D 2840 LXE Engine

1st version kW : 603.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm

: (4.45...4.65) Rack travel in mm : 9.00...12.00

: 10- 9- 4- 1- 8-- 6- 3- 5- 2 7 Firing order

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rom: 1150 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 500 2nd speed

Rack travel in mm: 8.8...9.0 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

cm3 : 0.8Spread 100 s: (1.2)

3rd speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 5.2...6.0 **

100 s: (-) cm3 : -Spread

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 250

: 0.90...1.10 travel mm

rpm : 450 2nd speed

: 2.90...3.50 travel mm

rpm : 750 3rd speed

travel mm : 5.50...5.90

rpm : 1150 4th speed

: 9.20...9.40 travel mm

rpm : 1400 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1225 Speed

Rack travel in mm : 15.20...17.80 1/min: 200 (220) Speed FUEL DELIVERY CHARACTERISTICS FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 1st version Speed Aneroid pressure h: 1300 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 Del.quantity : 284.0...286.0 1000 : (281.0...289.0) : 5.00 1000 s: (146.0...154.0) cm3 Spread 1000 : (9.00) Spread cm3 : 8.00 1000 s: (12.0) RATED SPEED 1st version **BREAKAWAY** Control Lever position degrees: 57...65 1st version 1mm rack travel less than Testina: full load rack tr: 12.00 1st rack travel in: 12.00 rpm : 1190...1200 rpm : 1190...1200 Speed Speed 2nd rack travel in: 4.00 : 1285...1315 STARTING FUEL DELIVERY Speed rom 4th rack travel in: 1450 rom : 0.00...1.00Speed Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0** LOW IDLE 1 1000 s: (-) Control Lever Rack travel in mm: 18.50 position degrees: 16...24 rpm : 100 Testina: Speed Del.quantity cm3/: 0 * 1000 s: (-) Speed rpm : 100 Minimum rack trave: 8.90 : 250 Rack trayel in mm: 18.50 rom Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 HIGH IDLE : 430...490 Speed rom 1st version Aneroid/Altitude Speed : 500 rpm Rack travel in mm : <7.00 Compensator Test Del.quantity cm3/: 0 * 1000 s: (-) 1st version 2nd version Setting : 500 Speed rpm Speed rpm hPa : 1300 Rack travel in mm: <7.50 Pressure : 13.00...13.10 Del.quantity cm3/: <50.0 Rack travel mm 1000 s: (-) Measurement Speed 1/min: 500 3rd version Speed rpm : 500 Rack travel in mm : 8.10...8.30 1st pressure hPa : -Del.quantity cm3/: 125.0 Rack travel in m: 8.80...9.00 1000 s: (-) 2nd pressure hPa : 100 Rack travel in m: 9.30...9.40 3rd pressure hPa : 470 LOW IDLE Rack travel in m: 11.80...12.20 Speed rpm : 250 Rack travel in mm : 7.30...7.50 START CUT-OUT

Del.quantity cm3/: 52.0...60.0 ** 1000 s: (-)

Remarks:

: MAN-NR. 2-7961

* applies to cylinders 1, 2, 3, 7 and 9

** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

Note remarks

: MB 18,3 L 3 : 24.11.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 649 810

Injection pump

Pump designation : PE10P120A320LS7809

EP type number : 0 412 629 800

Governor

Governor design. : RQV350..1050PA870-6

Governer no. : 0 421 813 766

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M443 LA Engine

: 401.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 20.00...21.00

: 10-9-4-1-Firing order

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 21.0...21.4

100 s: (20.7...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.90...2.10 travel mm

rpm : 700 2nd speed

: 4.10...4.50 travel mm

rpm : 1100 3rd speed

: 7.60...8.00 travel mm

rpm : 1200 4th speed

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm: 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 600 4th pressure hPa : 1100 Speed Aneroid pressure h: 750 Rack travel in m: 14.80...15.00 : 210.0...214.0 5th pressure hPa : Del.quantity 1000 : (207.0...217.0) Rack travel in m: 11.10...11.40 : 5.00 Spread cm3: (9.00) 1000 START CUT-OUT RATED SPEED 1/min: 270 (290) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 36...44 1st version Aneroid pressure h: 1300 Testina: 1st rack travel in: 14.10 Speed rpm : 1050 Del.quantity cm3/: 224.0...226.0 1000 s: (221.0...229.0) rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1155...1185 cm3 : 8.00 Speed Spread 4th rack travel in: 1300 1000 s: (12.0) Aneroid pressure h: 1300 Speed rom : 0.00...1.00 : 850 Speed rpm Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) LOW IDLE 1 Control lever cm3 : 8.00position degrees: 9...17 Spread 1000 s: (12.0) Aneroid pressure h: 1300 Testing: Speed : 200 Speed : 1050 rpm rpm Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0) Minimum rack trave: 8.60 Speed rpm Rack travel in mm : 6.20...6.80 cm3 : 8.00Spread 1000 s: (12.0) CONSTANT REGULATION Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...136.0 1000 s: (129.0...139.0) : 300...400 Speed rpm TORQUE CONTROL : 0.40 cm3 : 8.00Dimension a mm Spread rpm : 1050 1000 s: (-) 2nd speed Rack travel in m: 15.10...15.30 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 **BREAKAWAY** Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 14.10 rpm : 1090...1100 1st version Speed Setting : 600 STARTING FUEL DELIVERY Speed rpm hPa : 900 Pressure : 14.30...14.50 Rack travel mm : 100 Speed rpm Del.quantity cm3/: 240.9...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 11.70...11.90 2nd pressure hPa : 550
Rack travel in m: 13.20...13.40
3rd pressure hPa : 960 * Increase in control-rod travel with respect to setting at least 0.1 mm Rack travel in m: 14.40...14.50

Note remarks

: MB 21,9 z : 15.12.89 Test sheet Edition : 6.4.88 Replaces

: ISO-4113 Test oil

: 0 402 670 800 Combination no.

Injection pump

Pump designation : PE12P12OA32OLS7805-1

: 0 412 620 804 EP type number

Governor

Governor design. : RSV350...750POA825

: 0 421 833 221 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 444 LA Engine

: 389.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.10...14.20

Del.guantity cm3/: 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.guantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 210.0...212.0 Del.quantity 1000 : (207.0...215.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

Control lever position degrees: 21...29 Testina: 1st rack travel in: 13.10 rpm : 750...755 2nd rack travel in: 4.00 Speed rpm: 775...788 4th rack travel in: 1000 rpm : 0.30...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.5 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 5.40...5.60 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650
Del.quantity cm3/: 207.0...213.0
1000 s: (204.0...216.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 Speed rpm : 750...755 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0) Remarks: Observe VDT-I-420/120

Note remarks

: MB 21,9 y 1 : 13.12.89 Test sheet Edition Replaces : 21.8.87 Test oil : ISO-4113

Combination no. : 0 402 670 802

Injection pump

Pump designation: PE12P120A320LS7807 EP type number : 0 412 620 806

Governor

Governor design. : RSV350...750P0A825-2

: 0 421 833 250 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 444 A Engine

: 360.0 : 1500 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

Firing order : 3.20...3.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + -., .: 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.40...15.50

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 6.2...6.5

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 215.0...217.0 Del.quantity

1000 : (212.0...220.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

Control lever position degrees: 23...31 Testing: 1st rack travel in: 14.40 Speed rpm : 750...755 2nd rack travel in: 4.00 : 780...786 Speed rom 4th rack travel in: 1000 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 9...17 Setting point w/out bumper spring rpm Rack travel in mm: 6.3 Testing: Speed : 100 rpm Minimum rack trave: 13.00 rpm : 350 Rack travel in mm : 6.20...6.50 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 212.0...218.0 1000 s: (209.0...221.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.40 rpm : 750...755 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

LOW IDLE rpm : 350 Speed Rack travel in mm : 6.20...6.50 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0)

cm3 : 8.00Spread 1000 s: (12.00) Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

: MB 21,9 j 1 : 24.11.89 : 7.2.89 Test sheet Edition Replaces Test oil : ISO-4113

: 0 402 670 804 Combination no.

Injection pump

Pump designation : PE12P12OA320LS7813-1 : 0 412 620 811

EP type number

Governor

Governor design. : RSV350...750P0A825-5

: 0 421 833 277 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

: 441.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 16.50...16.60

Del.quantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 280.0...282.0 Del.quantity 1000 : (277.0...285.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

Control lever

position degrees: 20...28

Testing:

1st rack travel in: 13.10 Speed rpm : 750...755 2nd rack travel in: 4.00 rpm : 775...788 Speed 4th rack travel in: 900

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

: 350 Speed rpm Rack travel in mm: 5.2 : 350 Speed rpm

Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MB 22,0 d : 13.12.89 Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 402 670 807

Injection pump

Pump designation : PE12P12OA320LS7814-1

EP type number : 0 412 620 819

Governor

Governor design. : RSV375..1050P0A535-3

: 0 421 833 328 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 444 LA Engine

: 588.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ,, C : : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm

: (4.75...4.95)

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 13.10...13.30

Del.quantity cm3/: 26.2...26.5

100 s: (25.9...26.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 375.0 Rack travel in mm : 5.5...5.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1050

: 262.0...265.0 Del.quantity 1000 : (259.0...268.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever 1st version position degrees: 36...44 Aneroid pressure h: 1600 : 1030 Testing: rom Del.quantity cm3/: 264.0...267.0 1st rack travel in: 12.10 1000 s: (261.0...270.0) rpm : 1070...1080 Speed cm3 : 8.002nd rack travel in: 4.00 Spread 1000 s: (12.0) nom : 1130...1160 Speed Aneroid pressure h: 1600 4th rack travel in: 1400 : 750 rom : 0.30...1.40Speed rpm Speed Del.quantity cm3/: 286.0...289.0 1000 s: (283.0...292.0) LOW IDLE 1 Control Lever Spread cm3 : 8.00 1000 s: (12.0) position degrees: 13...21 Aneroid pressure h: 1600 Setting point w/out bumper spring : 750 Speed rpm rpm : 375 Del.quantity cm3/: 286.0...289.0 Rack travel in mm: 5.6 1000 s: (283.0...292.0) cm3 : 8.00 Testing: Spread 1000 s: (12.0) Speed : 100 rpm Minimum rack trave: 9.50 Aneroid pressure h: -: 500 : 375 rpm Speed rpm Del.quantity cm3/: 121.0...123.0 Rack travel in mm : 5.50...5.80 1000 s: (118.0...126.0) cm3 : 8.00 SET IDLE AUXILIARY SPRING Spread 1000 s: (12.0) Rack travel in mm: 2.00 TORQUE CONTROL **BREAKAWAY** Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 13.10...13.20 1st version : 950 1mm rack travel less than 2nd speed rpm Rack travel in m: 13.40...13.60 full load rack tr: 12.10 : 850 3rd speed rom rpm : 1070...1080 Rack travel in m: 13.90...14.10 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm Del.quantity cm3/: 260.0...280.0 1st version 1000 s: (256.0...284.0) Setting Speed : 600 rom hPa : 1050 Pressure Remarks: Rack travel mm : 13.10...13.30 Observe VDT-I-420/120 Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 9.00...9.20 2nd pressure hPa : 650 Rack travel in m: 11.30...11.50 3rd pressure hPa : 1420 Rack travel in m: 13.50...13.70 4th pressure hPa : -Rack travel in m: 7.30...7.60

FUEL DELIVERY CHARACTERISTICS

Note remarks

: IFS 23,1 b Test sheet Edition : 11.05.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 676 806

Injection pump

Pump designation: PE6P130A320RS7168 : 0 412 636 810 EP type number

Governor

Governor design. : RSV300...1500P2A542

Governer no. : 0 421 833 308

Customer-spec. information : ISOTTA Customer

: ID 38 SS 6 V Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-2-3-4-5-6

: 0-45-120-165-240-285 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 19.7...20.0

109 s: (19.3...20.3)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rpm : 300.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 2.0...2.6

100 s: (1.6...3.0)

cm3 : 1.0 100 s: (1.4) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

: 197.0...200.0 Del.quantity 1000 : (193.5...203.5)

: 6.00 cm3 Spread 1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testing:

1st rack travel in: 11.00

Speed rpm: 1540...1550 2nd rack travel in: 4.00

rpm : 1595...1625 Speed

3rd rack travel in: 4.00

rpm : 1620...1650 Speed

4th rack travel in: 1760 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 19...27 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Speed rpm : 300
Rack travel in mm : 7.70...7.90
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1500 1st speed

Rack travel in m: 12.00...12.10

rpm : 600 2nd speed

Rack travel in m: 12.00...12.20

3rd speed rpm : 275

Rack travel in m: 13.20...13.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1540...1550

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Remarks:

Note remarks

: IFS 23,1 c Test sheet Edition : 11.05.89

Replaces : ISO-4113 Test oil

Combination no. : 0 402 676 807

Injection pump

Pump designation: PE6P130A320LS7169 EP type number : 0 412 636 811

Governor

Governor design. : RSV300...1500P2A542

: 0 421 833 308 Governer no.

Customer-spec. information Customer : ISOTTA

: ID 38 SS 6 V Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-6-5-4-3-2 Firing order

: 0-75-120-195-240-315 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 19.7...20.0

100 s: (19.3...20.3)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 2.0...2.6

Spread

100 s: (1.6...3.0) cm3 : 1.0 100 s: (1.4)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

: 197.0...200.0 Del.quantity 1000 : (193.5...203.5) cm3 : 6.00 1000 : (10.00)

Spread

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testina:

1st rack travel in: 11.00

rpm : 1540...1550 Speed

2nd rack travel in: 4.00

rpm : 1595...1625 Speed

3rd rack travel in: 4.00

rpm : 1620...1650 Speed

4th rack travel in: 1760

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

: 100 Speed rpm

Speed rpm : 300 Rack travel in mm : 7.70...7.90

Rack travel in mm : 2.00 Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.00...12.20 3rd speed rpm : 275 Rack travel in m: 13.20...13.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

: 1540...1550 Speed rpm

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed : 100 rpm

Remarks:

•

Note remarks

: MB 14,7 g Test sheet : 24.11.89 Edition : 29.2.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 678 802

Injection pump

Pump designation: PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV650...1050P0A826

: 0 421 833 253 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M442A

: 234.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Spread

1st speed rpm: 1080

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rom : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

: 163.0...165.0 Del.quantity 1000 : (160.0...168.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 34...42

Testina:

1st rack travel in: 10.60

rpm : 1110...1120

2nd rack travel in: 4.00

rom : 1135...1150 Speed

4th rack travel in: 1400 Speed rpm: 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 18...26

Setting point w/out bumper spring

: 650 rpm Rack travel in mm: 4.2

Testina:

Speed rom : 100 Minimum rack trave: 19.50 : 650 rpm

Rack travel in mm : 4.10...4.30

Rack travel in mm : 2.00 : 650...710 Speed rpm

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 11.60...11.70 2nd speed rpm : 900

Rack travel in m: 13.20...13.40

: 1000 3rd speed rom

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 900 Speed rpm

Del.quantity cm3/: 206.0...210.0

1000 s: (203.0...213.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 1110...1120 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm =

25...35 1/min.

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

Note remarks

: MB 14,7 g 1 Test sheet : 24.11.89 Edition : 28.11.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 678 803

Injection pump

Pump designation : PE8P120A320LS7801-1 : 0 412 628 818

EP type number Governor

Governor design. : RSV350...750POA825-3

: 0 421 833 260 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442A Engine

: 240.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 5.2...5.4

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 233.0...235.0 Del.quantity

1000 : (230.0...238.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 14.10 Speed rpm : 750...755 2nd rack travel in: 4.00 rpm : 775...788 Speed 4th rack travel in: 1400 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.3 Testing: rpm : 100 Speed Minimum rack trave: 15.00 Speed rpm: 350
Rack travel in mm: 5.20...5.40
Rack travel in mm: 2.00
Speed rpm: 350...410 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL 2nd speed rpm : 900 Rack travel in m: 13.20...13.40 3rd speed rpm : 1000 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 233.0...239.0 1000 s: (230.0...242.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.10 Speed rpm : 750...755 Speed STARTING FUEL DELIVERY Speed rpm : 100 bel.quantity cm3/: 230.0...250.0 1000 s: (226.0...254.0) Remarks:

APPLICATION

Generator

K09

Note remarks

Test sheet : MB 14,7 g 2 : 01.12.89 Edition : 30.3.87 Replaces : ISO-4113 Test oil

Combination no. : 0 402 678 804

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV350...750P0A825-4

Governer no. : 0 421 833 261

Customer-spec. information

: MERCEDES-BENZ Customer

: OM442LA Engine

: 255.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.70...15.80

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.8 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 241.0...243.0 Del.quantity

1000 : (238.0...246.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever position degrees: 24...32 Testing: 1st rack travel in: 14.70 rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 775...788 Speed 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 10...18 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 5.6 Testing: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm: 350
Rack travel in mm: 5.40...5.80
Rack travel in mm: 2.00
Speed rpm: 350...410 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL 2nd speed rpm : 900 Rack travel in m: 13.20...13.40 3rd speed rpm : 1000 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 246.0...252.0 1000 s: (243.0...255.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.70 rom : 750...755 Speed STARTING FUEL DELIVERY rpm : 100 Speed

Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) Remarks:
APPLICATION
Generator

Note remarks

Test sheet : MB 14,7 g 6 Edition : 20.10.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 678 812

Injection pump

Pump designation : PE8P120A320LS7801-2

EP type number : 0 412 628 825

Governor

Governor design. : RSV350...1050P0A535-

2

Governer no. : 0 421 833 318

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442A

1st version kW : 260.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (4.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1030

Aneroid pressure h: 1100

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 36...44 Testina: 1st rack travel in: 11.80 rpm : 1070...1080 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1400 rom : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring : 350 rom Rack travel in mm: 5.7 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 350 Speed rom Rack travel in mm: 5.40...6.00 Rack travel in mm : 2.00 : 410...480 Speed rpm SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 12.80...12.90 : 950 2nd speed rpm Rack travel in m: 13.10...13.30 rpm : 830 3rd speed Rack travel in m: 13.80...14.00 4th speed rpm : 700 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed mar hPa : -Pressure : 11.20...11.50 Rack travel mm Measurement Speed 1/min : 500 1st pressure hPa : 420 Rack travel in m: 11.90...12.10 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70

1st version Aneroid pressure h: 1100 rpm_ : 700 Speed Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0)

Remarks:

Observe VDT-I-420/120

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 10,0 r : 02.10.89 Edition : 15.8.89 Replaces : ISO-4113 Test oil

: 0 402 745 807 Combination no.

Injection pump

Pump designation: PES5P120A720LS7174 EP type number : 0 412 725 806

Governor

Governor design. : RQ300/1050PA774-2 : 0 421 801 450 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM449 A Engine

1st version kW : 184.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance $+ - \frac{1}{2}$.: 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 6.4...7.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

- FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 650

: 196.0...198.0 Del.quantity

1000 : (193.0...201.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.40 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.7 Testina: rpm : 200 Speed Minimum rack trave: 8.70 : 300 Speed rpm Rack travel in mm : 6.40...7.00 Rack travel in mm : 2.00 rpm : 485...525 Speed TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.40...14.60 2nd speed rpm : 750 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man Pressure hPa : 650 Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.50...13.70 3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 * 4th pressure hPa : 850 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 11.90...12.20 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/ : 208.0...211.0 1000 s: (205.0...214.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm: 750 Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 150.0...152.0 1000 s: (147.0...155.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40 rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 10,0 v : 02.10.89 : 15.8.89 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 745 808

Injection pump

Pump designation : PES5P120A720LS7175

EP type number : 0 412 725 807

Governor

Governor design. : RQ300/1050PA774-4 Governer no. : 0 421 801 453

Customer-spec, information

: DAIMLER-BENZ Customer

: 0M449 LA Engine

1st version kW : 221.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

: 235.0...237.0 Del.quantity

1000 : (232.0...240.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.00 rpm : 1095...1110 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.7 Testing: : 200 Speed rpm Minimum rack trave: 7.60 rpm : 300 Rack travel in mm : 5.60...5.90 Rack travel in mm : 2.00 : 370...410 Speed rpm TORQUE CONTROL Dimension a mm : 0.65 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.00...13.20 2nd speed rpm : 750 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 800 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 11.00...11.20 2nd pressure hPa : 450 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 4th pressure hPa : 1125 Rack travel in m: 14.10...14.30 5th pressure hPa : -Rack travel in m: 10.00...10.40 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1400 rpm : 1050 Speed Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: 1400 : 750 Speed rpm Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 10,0 m 3 : 02.10.89 Edition Replaces : ISO-4113 Test oil : 0 402 745 809 Combination no. Injection pump Pump designation : PES5P120A720LS7160 : 0 412 725 802 EP type number Governor Governor design: : RQV300..1050PA940 : D 421 813 824 Governer no. Customer-spec. information : DAIMLER-BENZ Customer : 0M449 A Engine 1st version kW : 184.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 pressure, bar Orifice plate

: 0.8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.10...13.30

Del.guantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...6.3 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 300 1st speed

: 1.10...1.30 travel mm

600 2nd speed rpm

4.90...5.10 travel mm : 800 3rd speed rpm

: 5.80...6.10 travel mm : 1100 4th speed rom

travel mm : 8.20...8.60

: 1175 5th speed rpm

: 9.50...10.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

3rd pressure hPa : 750 Rack travel in m: 13.20...13.30 1st version rpm : 600 Speed 4th pressure hPa : 850 Aneroid pressure h: 650 : 196.0...198.0 Rack travel in m: 13.60...13.80 Del.quantity 1000 : (193.0...201.0) 5th pressure hPa : -: 5.00 Rack travel in m: 10.80...11.10 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 53...61 1st version Testing: Aneroid pressure h: 1200 1st rack travel in: 12.60 rpm : 1090...1100 rpm : 1050 Del.quantity cm3/: 208.0...211.0 2nd rack travel in: 4.00 rpm : 1150...1180 1000 s: (205.0...214.0) Speed 4th rack travel in: 1250 Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1200 rpm : 0.00...1.00 Speed : 750 LOW IDLE 1 Speed rpm Del.quantity cm3/: 216.0...220.0 Control lever 1000 s: (213.0...223.0) position degrees: 16...24 cm3 : 8.00 Spread 1000 s: (12.0) Testing: : 200 Aneroid pressure h: -Speed rpm Speed rpm : 500 Del.quantity cm3/ : 150.0...152.0 Minimum rack trave: 8.00 : 300 man Rack travel in mm : 5.70...6.30 1000 s: (147.0...155.0) Spread cm3 : 8.00 1000 s: (12.0) CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL BREAKAWAY Dimension a mm : 0.40 1st version Torque control curve - 1st version 1st speed rpm : 1050 1mm rack travel less than Rack travel in m: 13.60...13.80 2nd speed rpm : 750 full load rack tr: 12.60 Rack travel in m: 14.00...14.20 rpm : 1090...1100 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1st version 1000 s: (216.0...244.0) Setting Speed rpm : 600 Pressure hPa : 650 Remarks: : 13.10...13.30 Rack travel mm * Increase in control-rod travel with Measurement 1/min: 600 respect to setting at least 0.1 mm Speed 1st pressure hPa : 250 Rack travel in m: 11.20...11.40 2nd pressure hPa : 400

Rack travel in m: 12.50...12.70

Note remarks

: MB 10,0 o 3 Test sheet : 02.10.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 745 810

Injection pump

Pump designation : PES5P120A720LS7163

EP type number : 0 412 725 803

Governor

Governor design: RQV300..1050PA940-1

Governer no. : 0 421 813 825

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M449 LA

: 221.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.guantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.6...5.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.30 travel mm rpm : 600 2nd speed

: 4.90...5.10 travel mm

rpm : 800 3rd speed

: 5.80...6.10 travel mm

rpm : 1100 4th speed

: 8.20...8.60 travel mm

rpm : 1175 5th speed

: 9.50...10.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1070 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600Speed Aneroid pressure h: 800 : 235.0...237.0 Del.quantity 1000 : (232.0...240.0) : 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 52...60 Testing: 1st rack travel in: 12.00 rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 16...24 Testing: : 200 Speed rpm Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 5.60...5.90 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.00...13.20 2nd speed rpm : 750 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man hPa : 800 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min : 600 Speed 1st pressure hPa : 200 Rack travel in m: 11.00...11.20

3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 4th pressure hPa : 1125 Rack travel in m: 14.10...14.30 5th pressure hPa : -Rack travel in m: 10.00...10.40 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1050 Speed Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) cm3 : 8.00 Spread 1000 s: (12.) Aneroid pressure h: 1400 : 750 Speed rpm Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) cm3 : 8.00Spread 1000 s: (12.00 Speed rpm : 500 Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) cm3 : 8.00Spread 1000 s: (12.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

2nd pressure hPa : 450

Rack travel in m: 13.00...13.20

Note remarks

Test sheet : RVI 9,8 j : 07.02.89 Edition

Replaces

Test oil : ISO-4113

: 0 402 746 812 Combination no.

Injection pump

Pump designation : PES6P120A320RS7136

: 0 412 726 809 EP type number

Governor

Governor design. : RQV275...1000PA853

: 0 421 813 610 Governer no.

Customer-spec. information : RVI Customer

: MIDRO62045 Engine

1st version kW : 176.5 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 18.00...21.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - . . . : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00 & maximum rack tra: 18.0...21.0 Difference _, CS : 3.50...5.50

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 17.9...18.1

100 s: (17.6...18.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.60...1.80

550 2nd speed man

: 4.20...4.60 travel mm

3rd speed : 850 rpm

travel mm : 6.20...6.60 rpm : 1000 4th speed

travel mm : 7.20...7.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 1000 : 179.0...181.0 Del.quantity : (176.0...184.0) 1000 : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 59...67 Testing: 1st rack travel in: 10.00 rpm : 1065...1075 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 7...15 Testing: Speed : 200 rtom Minimum rack trave: 5.70 mon. Rack travel in mm : 4.10...4.30 CONSTANT REGULATION rom : 315...425 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 600 Rack travel in m: 11.90...12.00 and speed rpm : 1000 Rack travel in m: 10.90...11.00 2nd speed rpm 3rd speed rpm : 800 Rack travel in m: 11.60...11.70 4th speed rpm : 900 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting pm : 500 hPa : 1000 Speed rbm Pressure : 11.90...12.00 Rack travel mm

1/min: 500

1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 400 Rack travel in m: 11.50...11.60 3rd pressure hPa : 200 Rack travel in m: 10.40...10.60 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 1000 rpm Del.quantity cm3/: 155.0...159.0 1000 s: (152.0...162.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1065...1075 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 130.0...160.0 1000 s: (126.0...164.0) LOW IDLE Speed rpm : 275 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks:

Speed

Measurement

Note remarks

: RVI 9,8 j 1 : 07.02.89 Test sheet Edition

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 746 813

Injection pump

Pump designation : PES6P120A320RS7136

EP type number : 0 412 726 809

Governor

Governor design. : RQV275...1000PA855

: 0 421 813 611 Governer no.

Customer-spec. information

Customer

: RVI

Engine

: MIDRO62045

1st version kW

: 198.5

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 18.00...21.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00 & maximum rack tra: 18.0...21.0

Difference ., CS : 3.50...5.50

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm: 4.1...4.3

Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9) cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.60...1.80 travel mm

rpm : 550 2nd speed

: 4.20...4.60 travel mm

rpm : 850 3rd speed

: 6.20...6.60 travel mm

: 1000 4th speed rpm

: 7.20...7.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed

rpm : 1000 Aneroid pressure h: 1000

: 184.0...186.0 Del.quantity 1000 : (181.0...189.0)

: 5.00 cm3 Spread

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 60...68

Testina:

1st rack travel in: 10.90

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testina:

Speed rpm Minimum rack trave: 5.70 : 275 Speed rom

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 315...425 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1000 Speed rpm Pressure

: 11.90...12.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 400 Rack travel in m: 11.50...11.60

3rd pressure hPa : 200

Rack travel in m: 10.40...10.60

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm_ : 600 Speed

Del.quantity cm3/: 178.0...184.0 1000 s: (175.0...187.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 120.0...122.0

1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1065...1075 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...160.0 1000 s: (126.0...164.0)

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0)

cm3 : 8.00Spread

1000 s: (12.90)

Remarks:

Note remarks

: MAC 11,1 e Test sheet : 12.01.90 Edition : 30.10.89 Replaces : ISO-4113 Test oil

: 0 402 746 842 Combination no.

Injection pump

Pump designation : PES6P120A720RS7164 EP type number : D 412 726 816

Governor

: RQV325...875PA848-17 Governor design.

: 0 421 815 200 Governer no.

Customer-spec. information Customer : MACK

Engine : EMC6 300L 4VH

1st version kW : 200.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 11.00...13.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 875 1st speed

Rack travel in mm : 14.90...15.00

Del.guantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed : 1.20...1.40 travel mm

rpm : 450 2nd speed : 3.00...3.40 travel mm

: 850 3rd speed rpm

: 5.90...6.10 travel mm

1000 4th speed rom

: 7.40...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1120 Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

Rack travel in m: 10.90...11.30 2nd pressure hPa : 375 Rack travel in m: 12.70...12.80 : 225.0...227.0 : (222.0...230.0) Del.quantity 1000 : 5.00 cm3 Spread 3rd pressure hPa : 735 1000 : (9.00) Rack travel in m: 15.70...16.10 RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 54...62 Aneroid pressure h: 1200 Speed rpm : 510 Testing: Del.quantity cm3/: 305.0...311.0 1000 s: (302.0...314.0) 1st rack travel in: 13.90 Speed rpm: 915...925 2nd rack travel in: 4.00 cm3 : 8.00 Spread 1000 s: (12.0) rpm : 1065...1095 Speed 4th rack travel in: 1160 Aneroid pressure h: rpm : 0.00...1.00Speed rpm : 400 Speed Del.quartity cm3/: 156.0...160.0 1000 s: (154.0...162.0) LOW IDLE 1 Control lever position degrees: 10...18 **BREAKAWAY** Testina: : 275 Speed 1st version rpm 1mm rack travel less than Minimum rack trave: 6.20 rpm Rack travel in mm : 4.70...4.90 full load rack tr: 13.90 rpm : 915...925 Speed CONSTANT REGULATION rpm : 325...520 STARTING FUEL DELIVERY Speed TORQUE CONTROL Dimension a mm : 100 Speed rpm Del.quantity cm3/: 160.0...200.0 Torque control curve - 1st version rpm : 875 1000 s: (150.0...210.0) 1st speed Rack travel in m: 14.90...15.00 and speed rpm : 510
Rack travel in m: 16.80...17.00 Rack travel in mm : 10.90...11.30 2nd speed LOW IDLE : 700 3rd speed rpm Rack travel in m: 15.60...15.80 : 325 Speed rpm Rack travel in mm : 4.70...4.90 rpm : 600 4th speed Rack travel in m: 16.40...16.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 : 420 5th speed rpm Rack travel in m: 0.00...16.80 Spread 1000 s: (12.00) Aneroid/Altitude Compensator Test Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. 1st version Setting : 510 Setting and blocking of pointer of Speed rpm hPa : 1200 Pressure start-of-delivery sensor on cyl. 1 : 16.80...17.00 start of delivery Rack travel nm Bow dimension: Measurement Sliding-sleeve position = 37.0 mmSpeed $1/\min : 510$

1st pressure hPa : -

Note remarks

Test sheet : PER 12,2 e1 Edition : 24.11.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 746 844

Injection pump

Pump designation : PES6P120A320RS7162

EP type number : 0 412 726 819

Governor

Governor design. : RQ750PA836 Governor no. : 0 421 801 373

Customer—spec. information Customer : PERKINS

Engine : 2006 TAG

1st version kW : 280.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening 1 continue 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-2-6-3-5

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 37.9...38.1

100 s: (37.6...38.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 3.8...4.4

100 s: (3.5...4.7)

Spread cm3 : 0.8 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 379.0...381.0 1000 : (376.0...384.0)

cm3 : 5.00

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00 Speed rpm: 750...755 2nd rack travel in: 4.00 Speed rpm: 780...793

4th rack travel in: 820

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 300.0...340.0 1000 s: (296.0...344.0)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : PER 12,2 e : 29.03.89 : 27.10.88 Edition Replaces : TSO-4113 Test oil

Combination no. : 0 402 746 844

Injection pump

Pump designation : PES6P120A320RS7162 : 0 412 726 819

EP type number Governor

Governor design. : RQ750PA836-1 : 0 421 801 454 Governer no.

Customer-spec. information Customer : PERKINS

Engine : 2006 TAG

: 280.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm

: (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 1-4-2-6-3-5 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + -.. .: 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 37.9...38.1

100 s: (37.6...38.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 3.8...4.4

100 s: (3.5...4.7)

Spread cm3 : 0.8100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity : 379.0...381.0 1000 : (376.0...384.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 785...795 Speed 4th rack travel in: 820

rpm : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 300.0...340.0 1000 s: (296.0...344.0)

Remarks:

:

APPLICATION

Generator

Note remarks

: MAC 11,1a13 Test sheet : 15.12.89 Edition : 31.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 850

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number

Governor

: RQV325...900PA848-24 Governor design.

: 0 421 815 207 Governer no.

Customer-spec. information : MACK Customer

: E6-350 Engine

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 24.8...25.0

100 s: (24.5...25.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed

travel mm : 3.10...3.30

rpm : 850 3rd speed

: 5.90...6.10 travel mm

rpm : 1000 4th speed

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

rpm : 1130

Rack travel in mm : 7.00...13.00

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200 Del.quantity : 248.5...250.5 1000 : (245.5...253.5)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testina:

1st rack travel in: 13.80 rpm : 950...960 Speed

2nd rack travel in: 4.00

Speed rpm: 1075...1105 4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

: 275 Speed rom Minimum rack trave: 6.60 : 325 Speed man

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 14.80...14.90

: 625 2nd speed rom

Rack travel in m: 15.20...15.30

rpm : 700 3rd speed

Rack travel in m: 15.00...15.10 th speed rpm : 500

4th speed

Rack travel in m: 0.00...14.90

Aneroid/Altitude Compensator Test

1st version Setting

: 625 Speed rpm hPa : 1200 Pressure

: 15.20...15.30 Rack travel mm

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 310

Rack travel in m: 10.20...10.30

3rd pressure hPa : 710

Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625 Del.quantity cm3/ : 271.0...277.0 1000 s: (268.0...280.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 130.5...134.5 1000 s: (128.5...136.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 950...960

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 130.0...170.0

1000 s: (120.0...180.0)

Rack travel in mm : 8.30...8.70

LOW IDLE

rpm Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P10

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 12,0 a3 Test sheet Edition : 02.01.90 : 31.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 852

Injection pump

Pump designation : PES6P120A720RS7157 : 0 412 726 814

EP type number

Governor

Governor design. : RQV325...900PA909K

: 0 421 815 210 Governer no.

Customer-spec. information Customer : MACK

Engine : E7-400

: 298.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 900

Rack travel in mm : 15.80...15.90

Del.guantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed : 450 rpm

2.80...3.20 travel mm : 650

3rd speed rpm

5.60...5.80 travel mm : 900 4th speed rpm

: 8.30...8.50 travel mm

5th speed rpm : 1100

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

2nd pressure hPa : 325 Aneroid pressure h: 1200 Rack travel in m: 10.20...10.30 : 275.0...277.0 Del quantity 1000 : (272.0...280.0) 3rd pressure hPa : 790 : 5.00 Rack travel in m: 13.80...14.20 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 275 (285) 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 58...66 Testina: 1st version Aneroid pressure h: 1200 1st rack travel in: 14.80 Speed rpm: 625
Del.quantity cm3/: 302.5...308.5
1000 s: (299.5...311.5) rpm : 940...950 Speed 2nd rack travel in: 4.00 rpm : 1105...1135 Speed 4th rack travel in: 1200 cm3 : 8.00Spread 1000 s: (12.0) rpm : 0.00...1.00 Speed Aneroid pressure h: rpm : 400 LOW IDLE 1 Speed Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5) Control lever position degrees: 7...15 Testina: : 275 **BREAKAWAY** Speed rom Minimum rack trave: 6.30 : 325 1st version rpm 1mm rack travel less than Rack travel in mm : 5.10...5.30 full load rack tr: 14.80 CONSTANT REGULATION rpm : 940...950 rpm : 325...520 Speed Speed TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm Torque control curve - 1st version 1st speed rpm : 900 : 100 Speed rpm Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0) Rack travel in mm: 10.80...11.40 Rack travel in m: 15.80...15.90 rpm : 625 2nd speed Rack travel in m: 15.20...15.40 rpm : 700 3rd speed Rack travel in m: 15.40...15.60 LOW IDLE 4th speed rpm : 500 rpm : 325 Rack travel in m: 0.00...13.50 Speed Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) Aneroid/Altitude Compensator Test cm3 : 8.00 Spread 1000 s: (12.00) 1st version Setting Remarks: : 900 : MACK # 313GC5185-P6 Speed rpm hPa : 1200 Pressure : 15.80...15.90 Bow dimension: Rack travel mm Sliding-sleeve position = 37.0 mm Measurement 1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

Note remarks

Test sheet : MAC 12,0 a4 : 15.12.89 : 31.10.89 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 746 853

Injection pump

Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814

Governor

Governor design. : RQV325...900PA909-1K

: 0 421 815 211 Governer no.

Customer-spec, information Customer : MACK

: E7-350 Engine

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 900

Rack travel in mm: 13.80...13.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325 travel mm : 1.20...1.40

2nd speed rpm : 450

: 2.80...3.20 travel mm rpm : 650

3rd speed

: 5.60...5.80 travel mm

4th speed rpm: 900

: 8.30...8.50 travel mm

rpm : 1100 5th speed

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200 : 233.5...235.5 Del.quantity : (230.5...238.5) 1000 : 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 58...66 Testina: 1st rack travel in: 12.80 Speed rpm : 940...950 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 7...15 Testina: Speed rom Minimum rack trave: 5.90 rpm Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 13.80...13.90 : 625 2nd speed rpm Rack travel in m: 13.60...13.80 3rd speed rpm : 500 Rack travel in m: 11.60...12.00 Aneroid/Altitude Compensator Test 1st version Setting : 900 Speed rom hPa : 1200 Pressure : 13.80...13.90 Rack travel mm Measurement 1/min: 900 Speed 1st pressure hPa : -Rack travel in m: 8.00...8.40 2nd pressure hPa : 325

Rack travel in m: 9.40...9.50

3rd pressure hPa : 685 Rack travel in m: 12.10...12.50 START CUT-OUT 1/min: 275 (285) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 625 Speed rpm Del.quantity cm3/: 266.0...272.0 1000 s: (263.0...275.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 rpm : 940...950 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 10.30...10.90 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MACK # 313GC5185-P2

. PINCK # STOCCSTOS FE

Bow dimension: Sliding-sleeve position = 37.0 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: MB 12,0 a 3 : 24.11.89 Test sheet Edition : 25.8.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 854

Injection pump

Pump designation: PES6P120A720LS7114-3

: 0 412 726 820 EP type number

Governor

Governor design. : RQ300/1050PA911 : 0 421 801 476 Governer no.

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M447 LA Engine

: 257.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.2 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

: 229.0...231.0 Del.quantity 1000 : (226.0...234.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point: : 600 Speed rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.70 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.0 : 300 Speed rpm Rack travel in mm : 5.80...6.20 Rack travel in mm : 2.00 Speed : 360...400 rpm TORQUE CONTROL Dimension a mm : 0.40 2nd speed rpm : 1050 Rack travel in m: 13.60...13.80 3rd speed rpm : 700 Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 800 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.20...11.40 2nd pressure hPa : 600 Rack travel in m: 13.10...13.30 3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 * 4th pressure hPa : 1100 Rack travel in m: 13.90...14.10 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 229.0...233.0 1000 s: (226.0...236.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 244.0...247.0 1000 s: (241.0...250.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.70 rpm : 1095...1110 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1500

rom

: 1050

Note remarks

: MB 12,0 e : 24.11.89 Test sheet Edition : 15.8.89 Replaces : ISO-4113 Test oil

: 0 402 746 855 Combination no.

Injection pump

Pump designation : PES6P120A720LS7176 EP type number : 0 412 726 821

Governor

Governor design. : RQ300/1050PA897 : 0 421 801 452 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M447 A Engine

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ., . : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.6100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 650

Speed Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 680

: 201.0...203.0 Del.quantity

1000 : (198.0...206.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.50 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.2 Testing: Speed rpm Minimum rack trave: 7.70 : 300 rpm Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.50...13.70 2nd speed rpm : 750 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 680 Pressure Rack travel mm : 14.10...14.30 Measurement $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.10...13.30 3rd pressure hPa : 800 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.30...11.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200 : 1050 Speed rpm Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 rpm : 750 Speed Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 180.0...200.0

1000 s: (176.0...204.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

Note remarks

: SSC 10,5 f : 13.12.89 Test sheet Edition : 16.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 856

Injection pump

Pump designation : PES6P130A320LS7173

EP type number

: 0 412 736 802 Governor

Governor design. : RQV300...750PA914 : D 421 813 747 Governer no.

Customer-spec. information : SSCM Customer

: UD25-L6 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter x Wall thickness

: 8.00X2.00X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 48.0...48.3

100 s: (47.6...48.6)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 300.0 2nd speed

Rack travel in mm : 4.7...5.3 Del.quantity cm3/: 4.7...5.3

100 s: (4.3...5.7)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 300

: 1.10...1.50 travel mm

rpm : 600 2nd speed

travel mm 5.10...5.70 750

3rd speed rpm : travel mm : 7.70...7.90

rpm : 1000 4th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 800 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

: 480.0...483.0 Del.quantity 1000 : (476.5...486.5)

: 6.00 Spread cm3

1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 118...126

Testina:

1st rack travel in: 11.30 Speed rpm : 790...800 2nd rack travel in: 4.00

Speed rpm: 840...870

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed rpm: 100 Minimum rack trave: 6.50 Speed rpm: 300

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 315...445

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 790...800

:

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

APPLICATION

Navy

Note remarks

: FIA 9,5 a 1 : 15.12.89 : 28.6.89 Test sheet Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 857

Injection pump

Pump designation : PES6P120A720RS7177

EP type number : 0 412 726 823

Governor Governor design. : RQ275/1100PA915

Governer no. : 0 421 801 478

Customer-spec. information Customer : IVECO-FIAT

: 8460.41.601 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

: 188.0...190.0 Del.quantity 1000 : (185.0...193.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30

Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 275 Rack travel in mm: 5.8

Testing:

Speed rpm : 100 Minimum rack trave: 7.30 : 275 rpm

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 330...370 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 12.60...12.70

2nd speed rpm : 600

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 9.70...9.80

2nd pressure hPa : 320 Rack travel in m: 11.30...11.40

3rd pressure hPa : 270

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.30

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 125.0...155.0 1000 s: (121.0...159.0)

Remarks:

APPLICATION

Ship

Note remarks

: MB 12,0 f Test sheet : 12.01.90 Edition : 18.8.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 858

Injection pump

Pump designation : PES6P120A720LS7181 : 0 412 726 824 EP type number

Governor

Governor design. : RQ300/1050PA911-1 : 0 421 801 481 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M447 LA

: 294.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 27.4...27.6

100 s: (27.1...27.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.8...6.2 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

Del.quantity : 274.0...276.0

1000 : (271.0...279.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom Rack travel in mm: 20.0

Del.quantity cm3/: 269.0...272.0 1000 s: (266.0...275.0) Testing: cm3 : 8.001st rack travel in: 13.90 Spread 1000 s: (12.0) rpm : 1095...1110 Aneroid pressure h: 1600 2nd rack travel in: 4.00 rpm : 1150...1180 : 700 Speed man Speed Del.quantity cm3/: 298.0...301.0 4th rack travel in: 1300 rpm : 0.00...1.50 1000 s: (295.0...304.0) Speed cm3 : 8.00Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -Setting point w/out bumper spring : 500 : 300 Speed rpm Speed rpm Del.quantity cm3/: 143.0...145.0 Rack travel in mm: 6.0 Speed rpm : 300 Rack travel in mm : 5.80...6.20 1000 s: (140.0...148.0) cm3 : 8.00Spread 1000 s: (12.0) Rack travel in mm : 2.00 : 370...410 Speed rom BREAKAWAY TORQUE CONTROL Dimension a mm : 0.50 : 1050 1st version 2nd speed rpm Rack travel in m: 14.90...15.10 3rd speed rpm : 850 Rack travel in m: 15.60...15.80 Speed Aneroid/Altitude Compensator Test Speed 1st version rpm Setting : 600 Speed rpm hPa : 1000 Pressure : 15.20...15*.*40 Remarks: Rack travel mm Measurement $1/\min: 600$ Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 14.00...14.20 3rd pressure hPa : 1300 Rack travel in m: 15.40...15.60 4th pressure hPa : 1450 Rack travel in m: 15.90...16.10 5th pressure hPa Rack travel in m: 10.00...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

1mm rack travel less than full load rack tr: 13.90 rpm : 1095...1110 STARTING FUEL DELIVERY : 100 Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0)

Speed

: 1050

rpm

Note remarks

: MB 12,0 a 5 : 02.10.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 859

Injection pump

Pump designation : PES6P120A720LS7114-2

EP type number : 0 412 726 815

Governor

: RQV300..1050PA940-2 Governor design.

Governer no. : 0 421 813 826

Customer-spec. information

: DAIMLER-BENZ Customer

: OM447 LA Engine

1st version kW : 265.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)
Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + -., .: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.00...14.20

Del.guantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.2 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.10...1.30 travel mm rpm : 600 2nd speed

: 4.90...5.10 travel mm

rpm : 800 3rd speed

: 5.90...6.20 rpm : 1100 travel mm

4th speed

: 8.10...8.50 travel mm

rpm : 1175 5th speed

: 9.70...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1080 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 14.20...14.40 1st version rpm : 600 4th pressure hPa : 1200 Speed Rack travel in m: 14.50...14.70 Aneroid pressure h: 900 : 229.0...231.0 5th pressure hPa : -Del.quantity 1000 : (226.0...234.0) Rack travel in m: 10.40...10.70 cm3 : 5.00 Spread 1000 : (9.00) START CUT-OUT 1/min: 220 (240) RATED SPEED Speed FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 53...61 1st version Aneroid pressure h: 1500 Testing: : 1050 1st rack travel in: 13.20 Speed rpm rpm : 1090...1100 Del.quantity cm3/: 234.0...238.0 Speed 1000 s: (231.0...341.0) 2nd rack travel in: 4.00 cm3 : 8.00 rpm : 1150...1180 Speed Spread 1000 s: (12.0) 4th rack travel in: 1250 Aneroid pressure h: 1500 rem : 0.00...1.00Speed : 700 Speed rpm Del.quantity cm3/: 246.0...249.0 1000 s: (243.0...252.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 16...24 Spread 1000 s: (12.0) Aneroid pressure h: -Testing: rpm : 500 Speed Speed : 200 rpm Del.quantity cm3/: 146.0...148.0 Minimum rack trave: 8.00 : 300 1000 s: (143.0...151.0) Speed rom Rack travel in mm : 5.80...6.20 cm3 : 8.00 Spread 1000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed BREAKAWAY TORQUE CONTROL Dimension a mm : 0.50 1st version : 1050 1mm rack travel less than 2nd speed rpm Rack travel in m: 14.20...14.40 full load rack tr: 13.20 3rd speed rpm : 700 rpm : 1090...1100 Rack travel in m: 14.70...14.90 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm Del.quantity cm3/: 240.0...260.0 1st version 1000 s: (236.0...264.0) Setting : 600 Speed rpm hPa : 700 Remarks: Pressure : 14.00...14.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1100

Note remarks

: MB 12,0 d 3 : 02.10.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 860

Injection pump

Pump designation : PES6P120A720LS7161

: D 412 726 817 EP type number

Governor

Governor design. : RQV300..1050PA940-3

: 0 421 813 827 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M447 A

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.8...6.2 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.6Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.30 travel mm

rpm : 600 2nd speed

: 4.90...5.10 travel mm

: 800 3rd speed rpm

: 5.90...6.20 travel mm

rpm : 1100 4th speed

: 8.10...8.50 travel mm

: 1175 5th speed rpm

: 9.70...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1080 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 14.20...14.30 * 1st version rpm : 600 4th pressure hPa : . Speed Aneroid pressure h: 680 Rack travel in m: 11.50...11.80 Del.quantity : 201.0...206.0) START CUT-OUT cm3 : 5.00 Spread 1000 : (9.00) 1/min: 220 (240) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 53...61 Aneroid pressure h: 1200 : 1050 Speed rom Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) Testing: 1st rack travel in: 12.60 cm3 : 8.00rpm : 1090...1100 Speed Spread 1000 s: (12.) 2nd rack travel in: 4.00 Aneroid pressure h: 1200 rpm : 1150...1180 Speed : 750 4th rack travel in: 1250 Speed rpm Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) Speed rpm : 0.00...1.00 cm3 : 8.00LOW IDLE 1 Spread 1000 s: (12.00 Control lever : 500 position degrees: 16...24 Speed rpm Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) Testing: cm3 : 8.00 Speed : 200 Spread rpm Minimum rack trave: 8.00 1000 s: (12.00 : 300 Speed rpm Rack travel in mm : 5.80...6.00 BREAKAWAY CONSTANT REGULATION rpm : 300...450 1st version Speed 1mm rack travel less than TORQUE CONTROL Dimension a mm : 1.20 full load rack tr: 12.60 rpm : 1090...1100 rpm : 1050 Speed 2nd speed Rack travel in m: 13.60...13.80 3rd speed rpm : 750 STARTING FUEL DELIVERY Rack travel in m: 14.80...15.00 Speed rpm : 100 Del.quantity cm3/: 150.0...170.0 Aneroid/Altitude Compensator Test 1000 s: (146.0...174.0) Remarks: 1st version Setting : 600 Speed rpm * Increase in control-rod travel with Pressure hPa : 680 : 14.10...14.30 respect to setting at least 0.1 mm Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 2nd pressure hPa : 400 Rack travel in m: 13.20...13.40

3rd pressure hPa : 800

Note remarks

: MAC 11,1 f Test sheet : 28.09.89 Edition

Replaces

: ISO-4113 Test oil

: 0 402 746 862 Combination no.

Injection pump

Pump designation : PES6P120A720RS7183

EP type number : 0 412 726 825

Governor

: RQV325...875PA878-11 Governor design.

: 0 421 815 213 Governer no.

Customer spec. information

: MACK TRUCKS Customer

Engine : EM 6-300L

: 183.0 1st version kW Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 6.00...8.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 4.1...4.7 100 s: (3.9...4.9)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

2nd speed rpm : 450

travel mm : 2.50...2.80

rpm : 600 3rd speed

: 4.10...4.30 travel mm

rpm : 875 4th speed

: 7.30...7.50 travel mm

rpm : 1000 5th speed

travel mm : 8.70...9.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1500 : 209.0...211.0 Del.quantity 1000 : (206.0...214.0) : 5.00 Spread cm3 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 10.20 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 1000...1030 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed : 275 rpm Minimum rack trave: 6.30 rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 11.20...11.30 : 510 2nd speed rom Rack travel in m: 16.60...16.80 d speed rpm : 700 Rack travel in m: 13.30...13.50 3rd speed : 600 4th speed rpm Rack travel in m: 15.50...15.70 5th speed rpm : 450 Rack travel in m: 0.00...16.60 Aneroid/Altitude Compensator Test 1st version

Setting Speed : 510 rpm hPa : 1500 Pressure : 16.60...16.80 Rack travel mm

Measurement Speed

 $1/\min : 510$

1st pressure hPa : -Rack travel in m: 8.70...9.10 2nd pressure hPa : 435

Rack travel in m: 10.80...11.00 3rd pressure hPa : 795

Rack travel in m: 14.60...15.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 : 510 Speed rpm

Del.quantity cm3/: 308.0...314.0 1000 s: (305.0...317.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 rpm : 915...925 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 11.20 Speed rom

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 165.0...205.0 1000 s: (160.0...210.0)

Rack travel in mm : 8.70...9.10

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 41.0...47.0

1000 s: (39.0...49.0) cm3 : 8.00

Spread 1000 s: (12.00)

Remarks:

: MACK # 313GC5174-P8

FEHLENDEN TEXT ÜBERSETZEN у у

Delivery-valve spring pre-tension

Note remarks

: MAC 11,1 e1 Test sheet Edition : 28.09.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 864

Injection pump

Pump designation : PES6P120A720RS7164

EP type number : 0 412 726 816

Governor

: RQV325...875PA848-12 Governor design.

: 0 421 815 215 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: EC6-350 4VH Engine

: 261.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 12.00...13.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 16.00...16.10

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

2nd speed rpm : 450

: 3.00...3.40 travel mm

: 850 3rd speed rpm

: 5.90...6.10 travel mm

rpm : 1000 4th speed

: 7.40...7.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

: 255.5...257.5 : (252.5...260.5) Del.quantity 1000 : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testina: 1st rack travel in: 15.00 Speed rpm: 950...960 2nd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm Minimum rack trave: 5.90 Speed rpm

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION rpm : 325...520 Speed

TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 900 1st speed rpm Rack travel in m: 16.00...16.10 : 625 2nd speed rpm Rack travel in m: 16.50...16.70 3rd speed rpm : 550 Rack travel in m: 0.00...16.40

Aneroid/Altitude Compensator Test

1st version Setting rpm : 625 hPa : 1200 : 625 Speed Pressure Rack travel mm : 16.50...16.70

Measurement 1/min: 625 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.80 2nd pressure hPa : 265 Rack travel in m: 11.30...11.40 3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 : 625 Speed rpm

Del.quantity cm3/: 280.0...286.0 1000 s: (277.0...289.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 141.5...145.5 1000 s: (139.5...147.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00 rpm : 950...960 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 13.70 rpm : 850 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm: 9.40...9.80

LOW IDLE

Speed rpm : 325 Rack travel in mm: 4.30...4.50 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P12

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: MAC 11.1 e2 Test sheet : 28.09.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 865

Injection pump

Pump designation : PES6P120A720RS7164 : 0 412 726 816

EP type number

Governor Governor design. : RQV325...875PA848-13

: 0 421 815 216 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EM6-275L 4VH Engine

: 205.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 12.00...13.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm : 1000

4th speed rpm travel mm : 7.70...7.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

: 201.5...203.5 Del.quantity 1000 : (198.5...206.5) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 55...63 Testing: 1st rack travel in: 12.90 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 1050...1080 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rom Minimum rack trave: 5.90 rpm Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 13.90...14.00 : 510 2nd speed rpm Rack travel in m: 16.00...16.20 : 800 3rd speed rpm Rack travel in m: 14.20...14.40 rpm : 600 4th speed Rack travel in m: 15.30...15.50 5th speed rpm : 420 Rack travel in m: 0.00...15.90 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rpm hPa : 1200 Pressure Rack travel mm : 16.00...16.20 Measurement 1/min: 510 Speed

Rack travel in m: 10.70...11.10 2nd pressure hPa : 285 Rack travel in m: 12.10...12.20 3rd pressure hPa : 505 Rack travel in m: 15.40...15.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510 Del.quantity cm3/ : 281.0...287.0 1000 s: (279.0...290.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 152.0...156.0 1000 s: (150.0...158.0) BREAKAWAY ist version 1mm rack travel less than full load rack tr: 12.90 rpm : 915...925 Speed INTERMEDIATE RATED SPEED Rack travel in mm : 10.30 Speed rpm STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 185.0...225.0 1000 s: (175.0...235.0) Rack travel in mm: 10.70...11.10 LOW IDLE : 325 Speed rpm Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 39.0..45.0 1000 s: (37.0..47.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MACK # 313GC5181P8

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

1st pressure hPa : -

Note remarks

Test sheet : MAC 12,0 a5 : 28.09.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 866

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...875PA909-2K

Governer no. : 0 421 815 217

Customer-spec. information

: MACK TRUCKS Customer

Engine : EM7-300L

1st version kW : 224.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - . . : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 875

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325 travel mm : 1.20...1.40

2nd speed rpm : 450 : 2.80...3.20 travel mm

rpm : 650 3rd speed

travel mm : 5.60...5.80

rpm : 900 4th speed

: 8.30...8.50 rpm : 1100 travel mm

5th speed

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

: 212.5...214.5 Del.quantity : (209.5...217.5) 1000 : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 57...65 Testing: 1st rack travel in: 11.70 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 1050...1080 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed : 275 rpm Minimum rack trave: 6.00 rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 12.70...12.80 nd speed rpm : 510 Rack travel in m: 13.95...14.15 2nd speed : 400 3rd speed rpm Rack travel in m: 0.00...13.00 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rpm hPa : 1200 Pressure : 13.95...14.15 Rack travel mm Measurement Speed $1/\min : 510$ 1st pressure hPa : -Rack travel in m: 8.10...8.50

START CUT-OUT Speed 1/min : 275 (285) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 510 Speed rpm Del.quantity cm3/: 296.5...302.5 1000 s: (293.5...305.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 915...925 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0) Rack travel in mm : 10.40...11.00 LOW IDLE : 325 Speed rpm Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MACK # 313GC5185-P10 Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Bow dimension: Sliding-sleeve position = 37.0 mm

Rack travel in m: 12.30...12.70

2nd pressure hPa : 370
Rack travel in m: 9.50...9.60
3rd pressure hPa : 740

Note remarks

: MAC 11,1 e3 : 28.09.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 867

Injection pump

Pump designation : PES6P120A720RS7164 : 0 412 726 816

EP type number Governor

Governor design. : RQV325...875PA848-27

: 0 421 815 218 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : EC6-350 4VH

: 261.0 : 1750 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 12.00...13.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 16.00...16.10

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

travel mm 1.20...1.40

450 2nd speed rom

: 3.00...3.40 travel mm

3rd speed : 850 rpm

: 5.90...6.10 travel mm rpm : 1000 4th speed

: 7.40...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 1200 Del.quantity : 255.5...257.5 1000 : (252.5...260.5)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 55...63

Testing:

1st rack travel in: 15.00 Speed rpm : 950...960 2nd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm Minimum rack trave: 5.90 rpm

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 16.00...16.10

2nd speed rpm : 625

Rack travel in m: 16.50...16.70 d speed rpm : 550

3rd speed

Rack travel in m: 0.00...16.40

Aneroid/Altitude Compensator Test

1st version Setting

: 625 Speed rpm hPa : 1200 Pressure

: 16.50...16.70 Rack travel mm

Measurement

Speed $1/\min: 625$

1st pressure hPa : -

Rack travel in m: 9.40...9.80 2nd pressure hPa : 265 Rack travel in m: 11.30...11.40

3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 625 rpm

Del.quantity cm3/: 280.0...286.0

1000 s: (277.0...289.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 141.5...145.5

1000 s: (139.5...147.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00 rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm: 9.40...9.80

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 11,1 e4 Test sheet : 02.01.90

Edition

Replaces

Test oil : ISO-4113

: 0 402 746 867 Combination no.

Injection pump

Pump designation : PES6P120A720RS7164

EP type number : D 412 726 816

Governor

Governor design. : RQV325...900PA848-27

: 0 421 815 218 Governer no.

Customer-spec. information

Customer : MACK

: EC6-350 4VH Engine

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 12.00...13.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 16.00...16.10

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 32<u>5</u>.0 2nd speed Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm 2nd speed rpm : 450

: 3.00...3.40 travel mm rpm : 850 3rd speed

travel mm : 5.90...6.10 rpm : 1000 4th speed

: 7.40...7.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1120 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

MO8

: 255.5...257.5 Del.quantity 1000 : (252.5...260.5) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 15.00 rpm : 950...960 Speed 2nd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed rpm Minimum rack trave: 5.90 Speed rom Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 16.00...16.10 rpm : 625 2nd speed Rack travel in m: 16.50...16.70 3rd speed rpm : 550 Rack travel in m: 0.00...16.40 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed man hPa : 1200 Pressure : 16.50...16.70 Rack travel mm Measurement 1/min: 510 Speed 1st pressure hPa : -

Rack travel in m: 9.40...9.80

Rack travel in m: 11.30...11.40

2nd pressure hPa : 265

3rd pressure hPa : 665

Rack travel in m: 14.70...15.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 625 Speed rom Del.quantity cm3/: 280.0...286.0 1000 s: (277.0...289.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 141.5...145.5 1000 s: (139.5...147.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 15.00 rpm : 950...960 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm : 9.40...9.80 LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/: 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00

1000 s: (12.00)

: MACK # 313GC5181P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Remarks:

Note remarks

: MAC 11,1 e5 : 15.12.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 868

Injection pump

Pump designation: PES6P120A720RS7164

: 0 412 726 816 EP type number

Governor

: RQV325...875PA848-28 Governor design.

: 0 421 815 219 Governer no.

Customer-spec. information Customer

: EM6-275L 4VH Engine

: 205.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 12.00...13.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

: 450 2nd speed rom travel mm

: 2.80...3.10 rpm : 850 3rd speed

travel mm

: 6.20...6.40 rpm : 1000 4th speed

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1200 Del.quantity : 196.0...200.0) cm3 : 5.00 Spread 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 54...62 Testing: 1st rack travel in: 12.60 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testina: Speed rpm Minimum rack trave: 5.90 rpm Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 13.60...13.70 d speed rpm : 510 rpm 2nd speed Rack travel in m: 15.20...15.40 3rd speed rpm : 750 Rack travel in m: 13.80...14.10 th speed rpm : 600 Rack travel in m: 14.90...15.10 4th speed rpm : 450 5th speed Rack travel in m: 0.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed

: 510 man hPa : 1200 Pressure : 15.20...15.40 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 10.70...11.10 2nd pressure hPa : 265

Rack travel in m: 12.10...12.20

3rd pressure hPa : 450

Rack travel in m: 14.00...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510
Del.quantity cm3/ : 259.5...265.5
1000 s: (257.5...267.5)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 152.0...156.0 1000 s: (150.0...158.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.60 rpm : 915...925 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 185.0...225.0 1000 s: (175.0...235.0) Rack travel in mm : 10.70...11.10

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.30...4.50

Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00

Spread 1000 s: (12.00)

Remarks:

: MACK # 313GC5181P6

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: MAC 11,1 e6 : 28.09.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 869

Injection pump

Pump designation : PES6P120A720RS7164 : 0 412 726 816

EP type number Governor

: RQV325...875PA848-29 Governor design.

: 0 421 815 220 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EMC6 250L 4VH Engine

: 196.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

:-2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 12.00...13.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 18.4...18.6

100 s: (18.2...18.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.3...4.5 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm rpm : 450

2nd speed

travel mm : 2.80...3.20

rpm : 850 3rd speed

: 6.20...6.40 travel mm

4th speed rpm : 1000

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 900

Del.quantity : 184.0...186.0 1000 : (182.0...188.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 55...63 Testing: 1st rack travel in: 12.00 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm: 1045...1065 4th rack travel in: 1150 Speed rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm Minimum rack trave: 5.90 : 325 rpm Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 13.00...13.10 : 510 2nd speed rpm Rack travel in m: 14.90...15.10 3rd speed rpm : 600 Rack travel in m: 14.00...14.20 : 450 4th speed rpm Rack travel in m: 0.00...14.50 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rpm Pressure hPa : 900 : 14.90...15.10 Rack travel mm Measurement Speed 1/min: 510 1st pressure hPa : -

Rack travel in m: 11.70...11.80 3rd pressure hPa : 460 Rack travel in m: 13.70...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 510
Del.quantity cm3/: 252.0...258.0
1000 s: (250.0...260.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 152.0...156.0 1000 s: (150.0...158.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 915...925 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 10.40...10.80 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MACK # 313GC5181P4 Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : MAC 12,0 a6 : 28.09.89 Replaces : ISO-4113 Test oil Combination no. : 0 402 746 870 Injection pump Pump designation : PES6P120A720RS7157 : 0 412 726 814 EP type number Governor : RQV325...875PA878-14 Governor design. : 0 421 815 222 Governer no. Customer-spec. information Customer : MACK : EM7-250L 4VH Engine : 187.0 1st version kW : 1750 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _, C . : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY M14

Test pressure, bar: 17...19 : 2.75...2.85 Prestroke mm : (2.70...2.90) Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Phasing .: 0.50 (0.75) Tolerance + -., Time to cyl. no. : 1 BASIC SETTING rpm: 875 1st speed Rack travel in mm : 10.40...10.50 Del.quantity cm3/: 17.4...17.6 100 s: (17.1...17.9) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 325 1st speed : 1.30...1.60 travel mm rpm : 500 2nd speed 3.40...4.00 travel mm : 900 3rd speed rpm : 6.70...6.90 travel mm rpm : 1075 4th speed : 8.40...8.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 875

Del.quantity : 1/4.0....179.0)

Aneroid pressure h: 900

Speed

cm3 : 5.00 1000 : (9.00) cm3 Spread RATED SPEED

1st version Control lever

position degrees: 54...62

Testina:

1st rack travel in: 9.40 rpm : 915...925 Speed

2nd rack travel in: 4.00

: 1020...1050 Speed rpm

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 12...20

Testina:

Speed rom Minimum rack trave: 6.30 Speed rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 10.40...10.50 rpm : 510 2nd speed Rack travel in m: 11.90...12.10

: 450

rpm 3rd speed

Rack travel in m: 0.00...11.80

Aneroid/Altitude Compensator Test

1st version Setting

: 510 Speed rpm hPa : 900 Pressure

Rack travel mm : 11.90...12.10

Measurement

Speed 1/min: 510

1st pressure hPa : -

Rack travel in m: 7.80...8.20

2nd pressure hPa : 235

Rack travel in m: 8.80...8.90

3rd pressure hPa : 485

Rack travel in m: 10.80...11.20

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 510 Speed

Del.quantity cm3/: 244.0...250.0 1000 s: (241.0...253.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40 rpm : 915...925 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 9.80 : 805.0 Speed rpm

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 10.10...10.30

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P28

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : MAC 12,0 c Edition : 28.09.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 871

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

Governor design. : RQV325...900PA929K

: 0 421 815 223 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

Engine : E7-400

: 298.0 1st version kW Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 900 1st speed

Rack travel in mm : 15.80...15.90

Del.guantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

2nd speed rpm : 450

: 2.80...3.20 travel mm : 650

3rd speed rpm

5.60...5.80 travel mm : 900 4th speed rpm

travel mm

: 8.30...8.50 rpm : 1100 5th speed

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION Control-Lever position Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 1200

Del.quantity : 275.0...277.0 1000 : (272.0...280.0) Rack travel in m: 10.20...10.30 3rd pressure hPa : 790 cm3 : 5.00 1000 : (9.00) Rack travel in m: 13.80...14.20 Spread START CUT-OUT RATED SPEED 1/min : 275 (285) Speed 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 58...66 Testina: 1st version 1st rack travel in: 14.80 Aneroid pressure h: 1200 Speed rpm : 625
Del.quantity cm3/: 302.5...308.5
1000 s: (299.5...311.5) rpm : 940...950 Speed 2nd rack travel in: 4.00 Speed rpm : 1105...1135 4th rack travel in: 1200 cm3 : 8.00 Spread 1000 s: (12.0) Speed rpm : 0.00...1.00 Aneroid pressure h: rpm : 400 LOW IDLE 1 Speed Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5) Control Lever position degrees: 7...15 Testing: : 275 Speed rpm BREAKAWAY Minimum rack trave: 6.30 Speed 1st version rpm Rack travel in mm : 5.10...5.30 1mm rack travel less than CONSTANT REGULATION full load rack tr: 14.80 rom : 325...520 rpm : 940...950 Speed Speed TORQUE CONTROL INTERMEDIATE RATED SPEED Dimension a mm Rack travel in mm: 14.70 Torque control curve - 1st version Speed rpm : 850 rpm : 900 1st speed Rack travel in m: 15.80...15.90 STARTING FUEL DELIVERY rpm : 625 2nd speed Rack travel in m: 15.20...15.40 Speed rpm : 100 Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0) 3rd speed rpm : 700 Rack travel in m: 15.40...15.60 4th speed rpm : 500 Rack travel in m: 0.00...13.50 Rack travel in mm : 10.40...11.00 Aneroid/Altitude LOW IDLE Compensator Test Speed rpm : 325 Rack travel in mm : 5.10...5.30 1st version Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) Setting : 900 Speed rpm Spread cm3 : 8.00hPa : 1200 1000 s: (12.00) Pressure Rack travel mm : 15.80...15.90 Remarks: : MACK # 313GC5185-P8 Measurement 1/min: 900 Setting and blocking of pointer of Speed start-of-delivery sensor on cyl. 1 1st pressure hPa : start of delivery Rack travel in m: 8.10...8.50 2nd pressure hPa : 325 Bow dimension:

M18

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : MAC 12,0 c1 : 28.09.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 872

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...900PA929-1K

Governer no. : 0 421 815 224

Customer-spec. information

: MACK TRUCKS Customer

: E7-350 Engine

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X690 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 900

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed : 2.80...3.20 travel mm

rpm : 650 3rd speed

travel mm : 5.60...5.80

4th speed rpm : 900

: 8.30...8.50 rpm : 1100 travel mm

5th speed

travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

Rack travel in m: 12.10...12.50 Del.quantity : 233.5...235.5 1000 : (230.5...238.5) : 5.00 START CUT-OUT cm3 Spread 1000 : (9.00) 1/min: 275 (285) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 58...66 1st version Aneroid pressure h: 1200 : 625 Testina: Speed rpm 1st rack travel in: 12.80 Speed rpm : 940...950 2nd rack travel in: 4.00 Del.quantity cm3/: 266.0...272.0 1000 s: (263.0...275.0) Spread cm3 : 8.00 1000 s: (12.0) rpm : 1080...1110 Speed 4th rack travel in: 1200 Aneroid pressure h: rpm : 400 rpm : 0.00...1.00 Speed Speed Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0) LOW IDLE 1 Control lever position degrees: 7...15 BREAKAWAY Testina: 1st version Speed rpm : 275 Minimum rack trave: 5.90 1mm rack travel less than rpm Rack travel in mm : 4.70...4.90 full load rack tr: 12.80 rpm : 940...950 Speed CONSTANT REGULATION rpm : 325...520 INTERMEDIATE RATED SPEED Speed Rack travel in mm: 12.70 Speed TORQUE CONTROL rom Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 900 Rack travel in m: 13.80...13.90 Speed rpm : 100 Del.quantity cm3/ : 170.0...210.0 1000 s: (160.0...220.0) 2nd speed rpm : 625 Rack travel in m: 13.60...13.80 : 500 3rd speed rpm Rack travel in m: 11.60...12.00 Rack travel in mm : 10.30...10.90 Aneroid/Altitude LOW IDLE Compensator Test Speed rpm : 325 Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0 1st version 1000 s: (38.0...48.0) Setting cm3 : 8.00 Speed : 900 Spread rpm 1000 s: (12.00) hPa : 1200 Pressure : 13.80...13.90 Rack travel mm Remarks: : MACK # 313GC5185-P4 Measurement Setting and blocking of pointer of 1/min: 900 Speed start-of-delivery sensor on cyl. 1 start of delivery 1st pressure hPa : -Rack travel in m: 8.00...8.40 2nd pressure hPa : 325 Bow dimension: Sliding-sleeve position = 37.0 mm Rack travel in m: 9.40...9.50

3rd pressure hPa : 685

Note remarks

: MAC 12,0 c2 Test sheet Edition : 28.09.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 873

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...875PA929-2K

Governer no. : 0 421 815 225

Customer-spec. information

: MACK TRUCKS Customer

: EM7-300L Engine

: 224.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 875 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

travel mm : 2.80...3.20

3rd speed rpm : 650

: 5.60...5.80 travel mm

rpm : 900 4th speed

: 8.30...8.50 travel mm

rpm : 1100 5th speed

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

Del.quantity : 212.5...214.5 1000 : (209.5...217.5) Rack travel in m: 12.30...12.70 cm3 : 5.00 1000 : (9.00) START CUT-OUT Spread 1/min: 275 (285) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 57...65 Aneroid pressure h: 1200 : 510 Testina: rpm Del.quantity cm3/: 296.5...302.5 1000 s: (293.5...305.5) Spread cm3 : 8.00 1000 s: (12.0) 1st rack travel in: 11.70 Speed rpm: 915...925 2nd rack travel in: 4.00 rpm : 1050...1080 Speed 4th rack travel in: 1200 Aneroid pressure h: rpm : 0.00...1.00Speed Speed rpm : 400 Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5) LOW IDLE 1 Control lever position degrees: 7...15 **BREAKAWAY** Testing: rpm : 275 1st version Speed Minimum rack trave: 6.00 1mm rack travel less than rpm Rack travel in mm : 4.80...5.00 full load rack tr: 11.70 rpm : 915...925 Speed CONSTANT REGULATION rpm : 325...520 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 11.90 TORQUE CONTROL Speed rom Dimension a mm STARTING FUEL DELIVERY Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 12.70...12.80 2nd speed rpm : 510 Rack travel in m: 13.95...14.15 Speed rpm : 100 Del.quantity cm3/ : 180.0...220.0 1000 s: (170.0...230.0) rpm : 400 3rd speed Rack travel in mm : 10.40...11.00 Rack travel in m: 0.00...13.00 Aneroid/Altitude LOW IDLE Compensator Test Speed rpm : 325 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 40.0...46.0 1st version 1000 s: (38.0...48.0) Setting rpm : 510 hPa : 1200 Spread cm3 : 8.00Speed rpm 1000 s: (12.00) Pressure : 13.95...14.15 Rack travel mm Remarks: : MACK # 313GC5185-P12 Measurement Setting and blocking of pointer of 1/min: 510 Speed start-of-delivery sensor on cyl. 1 start of delivery 1st pressure hPa : -Rack travel in m: 8.10...8.50 2nd pressure hPa : 370 Bow dimension:

Sliding-sleeve position = 37.0 mm

M23

Rack travel in m: 9.50...9.60

3rd pressure hPa : 740

Note remarks

: MAC 12,0 a7 Test sheet : 28.09.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 874

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...850PA909-3K

Governer no. : 0 421 815 230

Customer-spec. information

Customer : MACK TRUCKS

Engine : E7-300

1st version kW : 220.0 : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 20.4...20.6

100 s: (20.2...20.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325 travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

rpm : 900 4th speed

travel mm : 8.30...8.50

rpm : 1100 5th speed

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1200 Del.quantity : 204.0...200.0 1000 : (202.0...208.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 51...59 Testing: 1st rack travel in: 11.20 rpm : 890...900 Speed 2nd rack travel in: 4.00 Speed rpm: 1040...1070 4th rack travel in: 1150 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rom Minimum rack trave: 6.30 : 325 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 850 1st speed rpm Rack travel in m: 12.20...12.30 rpm : 600 2nd speed Rack travel in m: 12.50...12.70 : 500 3rd speed rpm Rack travel in m: 0.00...11.10 Aneroid/Altitude Compensator Test 1st version Setting

: 600 Speed rpm hPa : 1200 Pressure : 12.50...12.70 Rack travel 9000

Measurement

1/min: 600 Speed

1st pressure hPa : -Rack travel in m: 7.70...8.10 2nd pressure hPa : 265 Rack travel in m: 9.00...9.10

3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 600 Speed rpm

Del.quantity cm3/: 241.0...247.0 1000 s: (239.0...249.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -: 400 Speed rpm

Del.quantity cm3/: 148.0...152.0 1000 s: (146.0...154.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 890...900 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P14

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : MAC 12,0 c3 : 28.09.89 Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 876

Injection pump

Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814

Governor Governor design: RQV325...850PA929-3K

Governer no. : 0 421 815 232

Customer-spec. information

Customer : MACK TRUCKS

: E7-300 4VH Engine

: 220.0 1st version kW Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom : 850 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 20.4...20.6

100 s: (20.2...20.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 325 : 1.20...1.40 travel mm

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

: 5.60...5.80 travel mm

4th speed rpm: 900

: 8.30...8.50 travel mm

rpm : 1100 5th speed

: 10.30...10.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1200

Del.quantity : 204.0...206.0 1000 : (202.0...208.0) Rack travel in m: 11.20...11.60 : 5.00 START CUT-OUT Spread cm3 1000 : (9.00) Speed 1/min : 275 (285) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 51...59 1st version Aneroid pressure h: 1200 rpm : 600 Testina: Speed Del.quantity cm3/: 241.0...247.0 1000 s: (239.0...249.0) 1st rack travel in: 11.20 Speed rpm : 890...900 2nd rack travel in: 4.00 cm3 : 8.00Spread rpm : 1040...1070 1000 s: (12.0) Speed 4th rack travel in: 1150 Aneroid pressure h: -Speed r : 400 Del.quantity : 148.0...152.0 rpm : 0.00...1.00Speed s: (146.0...154.0) LOW IDLE 1 Control lever position degrees: 7...15 **BREAKAWAY** Testing: 1st version Speed rpm Minimum rack trave: 6.30 1mm rack travel less than : 325 rpm Rack travel in mm : 4.70...4.90 full load rack tr: 11.20 rpm : 890...900 Speed CONSTANT REGULATION rpm : 325...520 INTERMEDIATE RATED SPEED Speed Rack travel in mm: 11.30 rpm : 805.0 TORQUE CONTROL Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 850 Rack travel in m: 12.20...12.30 rpm : 600 : 100 Speed 2nd speed rpm Rack travel in m: 12.50...12.70 Del.quantity cm3/: 180.0...220.0 3rd speed rpm : 500 1000 s: (170.0...230.0) Rack travel in mm : 10.00...10.60 Rack travel in m: 0.00...11.10 Aneroid/Altitude LOW IDLE Compensator Test rpm : 325 Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) 1st version Setting cm3 : 8.00 Speed rpm : 600 Spread hPa : 1200 1000 s: (12.00) : 12.50...12.70 Rack travel mm Remarks: : MACK # 313GC5185-P16 Measurement 1/min: 600 Setting and blocking of pointer of Speed start-of-delivery sensor on cyl. 1 start of delivery 1st pressure hPa : -Rack travel in m: 7.70...8.10

Bow dimension: Stiding-steeve position = 37.0 mm

2nd pressure hPa : 265

Rack travel in m: 9.00...9.10

3rd pressure hPa : 565

Note remarks

: RVI 12,0 i Test sheet Edition : 15.12.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 878

Injection pump

Pump designation : PES6P120A320RS7191

EP type number : 0 412 726 828

Governor

Governor design. : RQV275...1000PA927

Governer no. : 0 421 813 808

Customer-spec. information Customer : RVI

Engine : MIDR 06-35-40

: 314.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

Test Lines : 1 680 750 074

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 : (4.75...4.95) Prestroke mm

Rack travel in mm : 12.50...13.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Del.guantity cm3/: 27.7...27.9

100 s: (27.4...28.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 9.2...9.4 Del.quantity cm3/ : 2.3...2.9 100 s: (2.0...3.2)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.10...1.50 travel mm

rpm : 500 2nd speed

: 3.60...4.20 travel mm

: 700 3rd speed rpm

5.50...5.90 travel mm

1000 4th speed rom

travel mm : 7.60...7.80

5th speed rpm: 1400

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

rpm : 1060 Speed

Rack travel in mm : 15.20...17.80

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 900

: 277.0...279.0 Del.quantity 1000 : (274.0...282.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 12.90

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

: 1195...1225 Speed rpm

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

: 200 Speed rpm Minimum rack trave: 5.80 rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 330...430 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 13.90...14.00

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.90...9.30

2nd pressure hPa : 600

Rack travel in m: 12.90...13.00

3rd pressure hPa : 200

Rack travel in m: 9.70...10.10

START CUT-OUT

1/min : 225 (245) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000 Speed

Del.quantity cm3/: 268.0...274.0

1000 s: (265.0...277.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 145.0...175.0

1000 s: (141.0...179.0)

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 23.0...29.0

1000 s: (20.0...32.0) cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

NO1

Note remarks

: SAC 10,5 a Test sheet : 02.01.90 Edition

Replaces

: ISO-4113 Test oil

Combination po. : 0 402 746 879

Injection pump

Pump designation : PES6P130A320LS7173-1

: 0 412 736 803 EP type number

Governor

Governor design. : RQV400...750PA928

: 0 421 813 809 Governer no.

Customer-spec. information Customer : SACM

: UD25-L6 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Openina

pressure, bar : 172...175

: 1 680 750 060 Test lines

Outside diameter x Wall thickness

x Length mm : 8.00X2.00X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)
Rack travel in mm: 9.00...12.00
Firing order: 1-5-3-6-

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 48.0...48.3

100 s: (47.6...48.6)

cm3 : 0.6 Spread

100 s: (1.0)

rpm : 400.0 2nd speed Rack travel in mm: 4.7...5.3 Del.quantity cm3/: 4.7...5.3 100 s: (4.3...5.7)

Spread cm3 : 1.0 100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

: 0.50...0.90 travel mm

rpm : 500 2nd speed

travel mm : 1.90...2.10

rpm : 650 3rd speed

: 1.90...2.10 travel mm 4th speed rbm : 750

travel mm : 5.00...5.80

: 900 5th speed rpm

: 11.00...12.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 480.0...483.0 Del.quantity

1000 : (476.5...486.5)

: 6.00 cm3 Spread

1000 : (10.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30 Speed rpm: 750...755

2nd rack travel in: 4.00

Speed rpm: 777...790 4th rack travel in: 900

Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed : 100 rpm Minimum rack trave: 6.50

Speed rpm: 400
Rack travel in mm: 4.90...5.10
Rack travel in mm: 3.00
Speed rpm: 300...340

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Remarks:

APPLICATION

Navy

Note remarks

: BAO 15,9 b3 Test sheet : 02.10.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 880

Injection pump

Pump designation : PES6P120A320RS7105

EP type number : 0 412 726 800

Governor

Governor design. : RQV350...900PA935-1

: 0 421 813 820 Governer no.

Customer-spec. information : BAUDOUIN Customer

: 6P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - . . . : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.70...1.00 travel mm : 500

2nd speed rom : 3.10...3.80 travel mm

rpm : 800 3rd speed

: 6.50...6.90 travel mm rpm : 900 4th speed

: 7.80...8.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 940 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 339.0...341.0 Del.quantity 1000 : (336.0...344.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.00 Speed rpm : 940...950 2nd rack travel in: 4.00

Speed rpm : 1000...1030

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 21...29

Testing:

Speed rpm : 100 Minimum rack trave: 6.10 Speed rpm : 350

Speed rpm : 350 Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min: 270 (290)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 940...950

Remarks:

APPLICATION

Navy

Note remarks

: MB 11,7 i Test sheet : 24.11.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 881

Injection pump

Pump designation : PES6P120A720LS7195

EP type number : 0 412 726 829

Governor

Governor design. : RQ300/1100PA805-1

Governer no. : 0 421 801 505

Customer-spec. information Customer : MB-NFZ

Engine : 0M447hA

: 206.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.8...6.2 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -2 rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 750

: 197.0...199.0 Del.quantity

1000 : (194.0...202.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.40 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 : 300 Testing: : 100 Speed rpm Minimum rack trave: 7.50 : 300 rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -: 9.40...9.70 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 250 Rack travel in m: 9.50...9.70 2nd pressure hPa : 500 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 Speed rom : 600 Del.quantity cm3/: 188.0...191.0 1000 s: (185.0...194.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -

: 500

cm3 : 8.00

1000 s: (12.0)

1000 s: (126.0...134.0)

COM Del.quantity cm3/: 129.0...131.0

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rom Del.quantity cm3/: 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

APPLICATION

Ship

Speed

Spread

Note remarks

Test sheet : MB 11,7 c 4 Edition : 12.01.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 776 807

Injection pump

Pump designation : PES6P120A720LS7120-2

EP type number : 0 412 726 832

Governor

Governor design. : RSV350...1050P0A529

-3

Governer no. : 0 421 833 332

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 A

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 650

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Aneroid pressure h: 1200 Control Lever : 1030 position degrees: 48...56 Speed rpm Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) Testing: 1st rack travel in: 12.20 cm3 : 8.00Spread 1000 s: (12.0) rpm : 1080...1090 Aneroid pressure h: 1200 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 rpm : 750 Speed Del.quantity cm3/: 219.0...224.0 1000 s: (216.0...227.0) rpm : 0.30...1.40Speed cm3 : 8.00Spread 1000 s: (12.0) LOW IDLE 1 Control Lever Aneroid pressure h: -: 500 position degrees: 22...30 Speed rpm Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.7 Spread cm3 : 8.00 : 350 1000 s: (12.0) Speed rpm Rack travel in mm : 5.60...5.80 SET IDLE AUXILIARY SPRING BREAKAWAY Rack travel in mm : 2.00 1st version 1mm rack travel less than TORQUE CONTROL Torque control curve - 1st version full load rack tr: 12.20 1st speed rpm : 1050 rpm : 1080...1090 Rack travel in m: 13.20...13.30 Speed rpm : 950 2nd speed Rack travel in m: 13.70...13.90 STARTING FUEL DELIVERY rpm : 875 3rd speed Rack travel in m: 14.20...14.40 4th speed rpm : 750 : 100 Speed rpm Rack travel in m: 14.70...14.90 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) Aneroid/Altitude Remarks: Compensator Test : KRUPP 1st version APPLICATION Setting : 600 Speed Special-purpose vehicle rpm hPa : 600 Pressure Rack travel mm : 14.00...14.20 Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 2nd pressure hPa : 400 Rack travel in m: 13.20...13.40 3rd pressure hPa : 850 Rack travel in m: 14.30...14.50 4th pressure hPa : -Rack travel in m: 11.40...11.70 FUEL DELIVERY CHARACTERISTICS

N₀9

1st version

Note remarks

: FIA 8,1 C 2 Test sheet : 17.01.90 Edition : 19.05.88 Replaces : ISO 4113 Test oil

Combination no. : 0 403 446 114

Injection pump

Pump designation : PES6MW100/720RS1012

EP type number : 0 413 406 008

Governor

Governor design. : RQV300...1100MW19

Governer no. : 0 420 083 014

Customer spec. information Customer : FIA

: 8365, 25, 500 Engine

1st version kW : 132.4 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.90...3.00 : (2.85...3.05) Prestroke mm

Rack travel in mm: 9.0...12.0

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + -, .: 0.50 (0.75)

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 1150...11.60

Del.quantity cm3/: 9.60...9.80

100 s: (9.40...10.00)

cm3 : 0.35 Spread

100 s: (0.6)

rpm : 300 2nd speed

Rack travel in mm: 6.3...6.4 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.8)

Spread cm3 : 0.35

100 s: 0.35 100 s: 1.10...

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225

: 10.00...10.50 travel mm

rpm : 1150 2nd speed

travel mm : 9.10...9.30

rpm : 500 3rd speed

travel mm : 2.90...3.50

rpm : 300 4th speed

1.10...1.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100 Aneroid pressure h: 500 Del.quantity: 96.0...98.0

Del.quantity : 90.0....00 (94.0...100.0)

cm3 : 3.5 Spread 1000 : (6.0)

2nd version

rpm : 500 Speed Aneroid pressure h: -

Del.quantity cm3/: 75.0...77.0 1000 s: (73.0...78.0) Spread cm3 : 3.6 1000 s: (6.0) RATED SPEED 1st version Control lever position degrees: 45...53 Testing: 1st rack travel in: 10.50 Speed rpm: 1140...1150 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 5th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring : 300 mon Rack travel in mm: 6.3 Testina: : 100 Speed rpm Minimum rack trave: 8.0 : 300 rpm Rack travel in mm : 6.30...6.40 Rack travel in mm : 2.00 : 385...445 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 700 Rack travel in m: 12.40...12.50 2nd speed rpm : 1000 Rack travel in m: 11.50...11.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 270 Pressure Rack travel mm : 12.10...12.20 Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.50 2nd pressure hPa : 500 Rack travel in m: 12.40...12.50

START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 500 rpm : 700 Speed Del.quantity cm3/: 101.0...105.0 1000 s: (99.0...107.0) cm3 : 5.0Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 75.0...77.0 1000 s: (73.0...78.0) cm3 : 3.5Spread 1000 s: (6.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 160 LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 11.50...15.50 1000 s: (9.0...18.0) cm3 : 3.5Spread 1000 s: (5.5)

Remarks:

Acceleration from start to full load with n = 170...250 min. -1

After changing plunger—and—barrel assembly from 1 418 415 045 to ..083, perform setting/testing in accordance with test specifications of injection—pump assembly 0 403 446 203.

3rd pressure hPa :

Rack travel in m: 11.20...11.30

Note remarks

: RVI 8,8 K 4 Test sheet : 12.01.90 Edition : 09.06.89 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 164

Injection pump

Pump designation : PES6MW100/320RS1016

EP type number : 0 413 406 010

Governor

Governor design. : RQV300...1300MW25-4

Governer no. : 0 420 083 094

Customer-spec. information Customer : RVI

Engine : MIDRO6.02-12

: 113.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

Speed rpm : 1300 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 85.5...87.5

1000 : (83.5...89.5) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.80

rpm : 1370...1380 Speed

2nd rack travel in: 4.00

Speed rpm : 1485...1515 4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

rpm : 300 Speed Rack travel in mm: 4.1 Speed rpm : 300

Rack travel in mm : 6.60...6.80

rpm : 200 Speed Maximum rack trave: 3.20

CONSTANT REGULATION

Speed

Aneroid/Altitude Compensator Test

: 500 Speed rpm

: 10.50...10.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 700

Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 900

cm3 : 5.00Spread

Aneroid pressure h: -

rpm : 500 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80

Speed

Setting point w/out bumper spring

rpm : 340...550

1st version

Setting

hPa : 143 Pressure

Rack travel in m: 10.80...10.90

2nd pressure hPa : -

Rack travel in m: 10.00...10.10

3rd pressure hPa : 115

Rack travel in m: 10.00...10.30

START CUT-OUT

1/min: 230 (250)

Aneroid pressure h: 700

Del.quantity cm3/: 82.0...86.0 1000 s: (80.0...88.0)

1000 s: (7.0)

Del.quantity cm3/: 56.0...58.0

1000 s: (54.0...60.0)

rpm : 1370...1380

N13

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

Note remarks

: RVI 8,8 S Test sheet : 02.01.90 Edition : 15.08.89 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 208

Injection pump

Pump designation : PES6MW100/320RS1171 : 0 413 406 156

EP type number Governor

Governor design. : RQV300...1400MW97 : 0 420 083 158 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDSO60212C

: 97.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.50...9.60

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1570 1st speed

: 9.20...9.60 travel mm

rpm : 1450 2nd speed travel mm : 8.30...8.50

rpm : 500 : 3.00...3.40 3rd speed travel mm

4th speed rpm : 300

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 75.0...77.0 Del.quantity 1000 : (73.0...79.0)

: 3.50 cm3

Spread : (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing:

1st rack travel in: 8.50 rpm : 1460...1470 Speed 2nd rack travel in: 4.00 rpm : 1565...1595 Speed 4th rack travel in: 1700 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 3.9 Testing: : 200 Speed rpm Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 5.50...5.70 START CUT-OUT 1/min: 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 900 Speed rom Del.quantity cm3/: 66.5...69.5 1000 s: (64.0...72.0) cm3 : 5.00Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.50 Speed rpm : 1460...1470 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 90.0...110.0 1000 s: (87.0...113.0) Rack travel in mm : 19.50...21.00 LOW IDLE : 300 Speed rpm -Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

cm3 : 3.50

1000 s: (5.50)

Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Spread

Note remarks

: RVI 8,8 S 1 Test sheet : 02.01.90 Edition : 05.08.88 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 209

Injection pump

Pump designation : PES6MW100/320RS1171

EP type number : 0 413 406 156

Governor

Governor design. : RQV300...1300MW80-1 Governer no. : 0 420 083 159

Customer-spec, information Customer : RVI

: MIDSO60212B Engine

1st version kW : 113.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.80...10.90

Deliguantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 1.3...1.7

100 s: (1.0...1.9) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed

: 8.70...9.10 travel mm rpm : 1350 2nd speed

: 7.60...7.80 travel mm

rpm : 500 3rd speed

: 2.80...3.40 travel mm rpm : 300

4th speed : 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 80.0...90.0)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

rpm : 1370...1380 Speed 2nd rack travel in: 4.00 rpm : 1520...1550 Speed 4th rack travel in: 1650 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 5.3 Testina: : 100 Speed rpm Minimum rack trave: 7.00 Speed rpm: 300 Rack travel in mm : 5.40...5.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -Rack travel mm : 8.80...8.90 Measurement $1/\min : 500$ Speed 1st pressure hPa : 100 Rack travel in m: 9.30...9.40 2nd pressure hPa : 200 Rack travel in m: 10.20...10.50 3rd pressure hPa : 700 Rack travel in m: 10.80...10.90 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80 Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 13.0...17.0 1000 s: (10.5...19.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Stärt-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,0 D 78 : 02.01.90 Edition Replaces : ISO-4113 Test oil : 0 403 446 216 Combination no. Injection pump Pump designation : PES6MW100/720RS1144 : 0 413 406 138 EP type number Governor Governor design. : RQV300...1400MW48-8 : D 420 083 175 Governer no. Customer-spec. information : MB-NFZ Customer : OM 366 A Engine : 125.0 1st version kW Rated speed : 2800 TEST BENCH REQUIREMENTS Test oil inlet temp. _, C . : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar Test Lines : 1 680 715 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasina Tolerance + -., .: 0.50 (0.75) BASIC SETTING rpm: 14001st speed Rack travel in mm : 10.70...10.80 Del.quantity cm3/: 7.5...7.7 100 s: (7.3...7.9) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm : 8.5...8.7 Del.quantity cm3/ : 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1550 1st speed : 9.10...9.50 travel mm rpm : 1450 2nd speed : 8.30...8.50 travel mm rpm : 500 : 2.50...3.10 3rd speed travel mm rpm : 3004th speed : 1.00...1.40 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1430 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1400 : 75.0...77.0 Del.quantity 1000 : (73.0...79.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED

1st version

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.50...3.60

: (3.45...3.65)

Control lever position degrees: 49...57 Testina: 1st rack travel in: 9.70 Speed rpm : 1440...1450 2nd rack travel in: 4.00 rpm : 1535...1565 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 8.6 Testing: Speed : 100 rom Minimum rack trave: 10.00 : 300 Speed rpm Rack travel in mm : 8.50...8.70 TORQUE CONTROL Dimension a mm : 1.50 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 10.70...10.80 nd speed rpm : 750 Rack travel in m: 12.20...12.30 2nd speed rpm : 950 3rd speed Rack travel in m: 11.70...11.90 : 1200 4th speed rpm Rack travel in m: 10.80...11.10 START CUT-OUT 1/min : 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 74.5...77.5 1000 s: (72.0...80.0) Spread cm3 : 5.00 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 Speed rpm : 1440...1450

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Remarks:

N19

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 6,0 D 79 : 02.01.90

Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 217

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RQV300...1300MW48-9

: 0 420 083 176 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366A Engine

1st version kW : 125.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rom: 1300 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3 100 s: (0.5) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1440 1st speed

: 9.30...9.70 travel mm

rpm : 1350 2nd speed

: 8.60...8.80 travel mm

rpm : 500 3rd speed

: 2.70...3.30 travel mm

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 77.0...79.0 Del.quantity

: (75.0...81.0) 1000

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

N20

Control Lever position degrees: 48...56 Testing: 1st rack travel in: 10.00 rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm: 1425...1455 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm Rack travel in mm: 7.9 Testina: : 100 Speed rpm Minimum rack trave: 9.50 Speed rpm : 300 Rack travel in mm : 7.80...8.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 11.00...11.10 2nd speed rpm : 800 Rack travel in m: 11.80...12.10 3rd speed rpm : 585 Rack travel in m: 12.00...12.20 : 1100 4th speed rpm Rack travel in m: 11.00...11.20 START CUT-OUT 1/min: 230 (250) Speed FUFL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 75.5...78.5 1000 s: (73.0...81.0) cm3 : 5.00Spread 1000 s: (7.0) : 585 Speed rpm Del.guantity cm3/: 68.5...71.5 1000 s: (66.0...74.0) **BRFAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 7.80...8.00 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

N21

Speed

Note remarks

Test sheet : RVI 8,8 S 2 Edition : 02.01.90 : 31.03.89 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 220

Injection pump

Pump designation : PES6MW100/320RS1171

EP type number : 0 413 406 156

Governor

Governor design. : RQV300...1400MW80-3

: 0 420 083 183 Governer no.

Customer-spec. information Customer : RVI

: MIDR 06.02.12D Engine

1st version kW : 134.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina |

pressure, bar : 173...176

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.1)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1590 1st speed

: 9.50...9.90 travel mm

rpm : 1450 2nd speed

: 8.50...8.70 travel mm

rpm : 500 : 2.80...3.40 3rd speed travel mm

rpm : 300 4th speed

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

Del.quantity : 92.0...96.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Testina:

1st rack travel in: 10.10

rpm : 1470...1480 Speed 2nd rack travel in: 4.00 rpm : 1600...1630 Speed 4th rack travel in: 1700 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 5.5 Testing: Speed rom : 200 Minimum rack trave: 7.10 Speed rpm: 300 Rack travel in mm : 5.50...5.70 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : -Rack travel mm : 9.10...9.20 Measurement 1/min: 500 Speed 1st pressure hPa : 80 Rack travel in m: 9.60...9.70 2nd pressure hPa : 200 Rack travel in m: 10.30...10.60 3rd pressure hPa : 750 Rack travel in m: 11.10...11.20 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 : 900 Speed rpm Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 42.0...44.0 1000 s: (40.0...46.0)

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1470...1480

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 95.0...115.0 1000 s: (92.0...118.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm: 300
Rack travel in mm: 5.50...5.70
Del.quantity cm3/: 15.0...19.0
1000 s: (12.5...21.5)
Spread cm3: 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

Note remarks

Test sheet : MB 6,0 D 82 : 02.01.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 446 225

Injection pump

Pump designation : PES6MW100/729RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RQV300...1400MW48-11

: 0 420 083 190 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M366A Engine

: 125.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - . . : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.3 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1550 1st speed

travel mm 9.20...9.60

: 1450 2nd speed rpm

: 8.30...8.50 travel mm

: 550 3rd speed rpm

: 2.80...3.40 travel mm

: 300 4th speed rpm

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 75.0...77.0 Del.quantity 1000 : (73.0...79.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 48...56 Testing: 1st rack travel in: 9.90 Speed rpm : 1440...1450 2nd rack travel in: 4.00 Speed rpm : 1530...1560 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 8.0 Testing: : 100 Speed rpm Minimum rack trave: 9.50 Speed rpm : 300 Rack travel in mm : 7.80...8.30 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 10.90...11.00 rpm : 800 2nd speed Rack travel in m: 11.50...11.70 3rd speed rpm : 1000 Rack travel in m: 11.10...11.40 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm: 800 Del.quantity cm3/: 67.5...70.5 1000 s: (65.0...73.0) cm3 : 5.00Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90

rpm : 1440...1450

Speed rpm : 100 Del.quantity cm3/ : 80.0...90.0 1000 s: (77.0...93.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 7.80...8.30 Del.quantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Speed

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : IHC 7,6 U : 01.12.89 Edition : 13.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 227

Injection pump

Pump designation : PES6MW100/320RS1182

EP type number : 0 413 406 167

Governor

Governor design. : RQV350...1200MW46-19

Governer no. : 0 420 083 191

Customer-spec. information Customer : NAVISTAR

: DTA-466 Engine

1st version kW : 182.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 4.00...4.10 Prestroke mm

: (3.95...4.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

BASIC SETTING

rpm: 800 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.30...8.50 travel mm rpm : 1460 2nd speed

: 9.10...9.50 travel mm

rpm : 550 3rd speed

: 3.10...3.70 rpm : 350 travel mm

4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800 Aneroid pressure h: 800

Del.quantity : 133.5...135.5 1000 : (131.5...137.5)

: 3.50

cm3 Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.70

Speed rpm : 1260...1280

2nd rack travel in: 4.00

Speed rpm : 1395...1405 4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 8...16

Setting point w/out bumper spring Speed rpm : 350

Rack travel in mm: 6.4

Testing:

: 100 Speed rpm Minimum rack trave: 9.00

rpm

Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 220 Pressure

: 11.00...11.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.70 2nd pressure hPa : 450

Rack travel in m: 12.10...12.40

3rd pressure hPa : 800

Rack travel in m: 12.70...12.80

START CUT-OUT

1/min: 180 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

rpm : 1200

Del.quantity cm3/: 130.0...134.0 1000 s: (128.0...136.0) Spread cm3 : 6.50

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 98.5...100.5 1000 s: (96.5...102.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1260...1280 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.30...6.50

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

:

Remarks:

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.